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## Contents for April 1954


| | | |
|---|---|---|
| Double Bonus for Meat Hogs | Farm Journal | 1 |
| Let's Simplify Milk Inspection | Ohio Farmer | 4 |
| How to Control Cattle Lice* | North Carolina Extension | 6 |
| Artificial Breeding, Remaking Our Dairy Herds | Agricultural Research | 7 |
| Judging Sheep, How To Do It Right | Utah Fact Sheet No. 27 | 9 |
| Production Testing of Beef Cattle | Oregon Bulletin 746 | 13 |
| No Depression—Only Large Abundance* | Minnesota Extension | 17 |
| Preserve Grass Silage with Bisulfite | Pennsylvania Farmer | 18 |
| Modern Farming—F.F.A. Style | The Western Farm Life | 24 |
| When To Buy New Machinery | The Farmer | 27 |
| Spring Fertilization Will Aid Bluegrass* | Ohio State University | 28 |
| How To Buy and Sell a Farm Taxwise | Successful Farming | 29 |
| Weed Control In Corn | Pacemakers Corn Club | 33 |
| Control of Corn Insects | Pacemakers Corn Club | 35 |
| Heating Farm Homes With Sunshine* | University of Nebraska | 37 |
| Irrigation Makes Luxuriant Grass | American Agriculturist | 38 |
| What's A Farm Woodlot Worth?* | Michigan State College | 40 |
| Piatt County's Amazing Million Dollar Club | National Fertilizer Review | 41 |
| Field Brome in the Orchard | Rural New Yorker | 46 |
| Controlling Mormon Crickets | The Hereford Journal | 49 |
| Weed Killer Equipment and How to Use It | New Jersey Farm & Garden | 51 |
| Are You Feeding "Hardware" to Your Livestock? | Utah Farmer | 53 |
| Ketosis Hits Dairy Cows Oftener Now* | Michigan Extension | 56 |
| Large Cow Stalls and Electric Trainers | Wisconsin Special Bulletin 3 | 57 |
| Veterinarians Notebook: Foot and Mouth Disease | Farmer & Stock Breeder | 60 |
| Supplements Help Poor Roughage Fatten Beef | Missouri Ruralist | 63 |
| How To Do A Better Job With Poultry | Poultry Tribune | 65 |
| Feed Intake Measures Egg Production* | Colorado A & M | 69 |
| Six Ways to Judge Efficient Farming | The Progressive Farmer | 70 |
| Big Business on 120 Acres | Successful Farming | 73 |
| These Things Mean Heavier Beef Calves* | University of Montana | 76 |
| Yellowed Alfalfa? | American Agriculturist | 77 |
| What Fuel Is Best for Your Tractor* | Virginia Extension | 79 |
| Hauled—In Pastures | New Jersey Agriculture | 80 |
| Three Men Use Fifth-Four Motors | Electricity on the Farm | 82 |
| Early Hybrids Planted Thick Give Good Yields* | VPI Newsletter | 84 |
| Lamb and Eggs Go Together | American Poultry Journal | 85 |
| Feeding Antibiotics to Swine | The Hog Breeder | 88 |
| Wool Floor for '54 Set at 52.1 cents* | University of Wyoming | 90 |
| For Bigger Hay Yields, Control Insects | American Agriculturist | 91 |
| Cattle Inherit Their Ability to Gain* | Farm, Ranch & Home News | 93 |
| *Short Features in this issue. One-year Continuing Index, pages 94 and | | 95 |

# The Farmer's Digest

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The Farmers Digest

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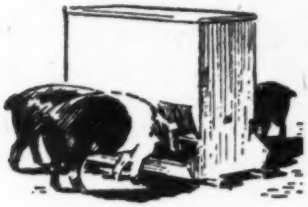

# DOUBLE BONUS FOR MEAT HOGS

**They make cheaper gains, and soon they'll be getting their deserved spread over the lard type on all markets. . . .**

Condensed from Farm Journal

THERE'S a two-way pay-off ahead for the man raising the naturally meaty, heavily-muscled hog.

First, we're getting a "pool" of meat-hog breeding stock (in all breeds) that will gain faster and cheaper than the lard type.

Second, we're well on the way toward an honest-to-gosh price differential between the meat hog and the lardy. Call it a "bonus" for the meat type, if you wish, or a "discount" for the lardy—either way, there'll soon be the kind of spread that counts.

Hog buyers and market specialists agree: **there should be at least a $1-per-hundred differential within two years on all markets.**

So, if you're not already selecting breeding stock to produce this kind of hog, it'll pay you to get busy.

**There's plenty of reason** for the price difference. Meat-type animals yield higher in the four lean cuts—ham, loin, picnic, and butt. These cuts represent a little less than half of the chilled carcass weight of a 200- to 240- pound hog.

**Right now those four cuts are worth about 70% of the entire carcass on the retail market.** Three years ago it was 66%, five years ago 60%, and 15 years ago only 55%.

That's a powerful indication of what the housewife wants, and the premium she's willing to pay for the leaner cuts.

Reprinted by permission from Farm Journal, Philadelphia, Penn.

Most packers, some marketers, especially co-ops, even some livestock exchanges and stock yards people, are zealously training hog buyers to grade on the hoof.

Some of the smaller markets —mostly in Ohio and Indiana, are now paying a differential. You can expect the practice to spread.

How to get set with meat hogs is a sure-enough tough problem. It's not as simple as just going out and buying a stretchy boar. Nobody wants to go back to the weedy, hard-feeding, slim-jim kind of hog. We need a hog with length and muscling to produce the most high-value cuts. Even more important, we must have one that will raise big litters that are good doers in the feedlot.

L. N. Hazel, researcher in animal breeding at Iowa State College, sets up these "standards" for a meat-type hog: one that will weigh close to 200 pounds at five months, make a pound of gain with about three pounds of feed, and yield close to 50% of its live weight in the so-called "primal cuts."

Hazel prefers to call them a "farmer's type" — the kind that will net the most money in the pocket.

E. C. Miller Jr., Purdue University extension hog man, sees a meat hog as one that is ready for market at 200 to 220 pounds, and measures about 42 inches from the base of his ear to the base of his tail. This length makes about a 30-inch carcass.

Everyone agrees that we're shooting for a "combination" barrow—a practical, easy-feeding hog with length and muscling for an acceptable carcass.

**How do you make sure** of getting the breeding stock that you need?

If you're going to buy a boar to breed the sows and gilts you already have, by all odds your best bet is to get one backed by feed and cut-out records that **prove** he's right. Records like that aren't plentiful, but they do exist.

In Ohio, the State University has such records on many herds that offer breeding stock for sale. Ohio has probably gone farther on this service than any other state.

But in nearly all states, you can find people like reputable hog buyers or an extension man who keeps a list of sources. They can tell you where to get meat-type boars and sows that are backed by authentic records. The new Production Registry Program of the purebred swine associations will tab boars from lines with extra good type and gain ability.

Unless you're dead sure of

your own judgement, hunt up somebody who really knows the score on meat hogs. Consult him and follow his advice. Guard against getting stuck, or stung, with small litters, poor doers, or shotes that take forever to finish out.

In the words of Bernard Collins, a top-notch and extensive meat-hog grower in Wright County, Iowa: "Hang back until you find what you need. Don't get sucked in by quitting too soon."

That kind of pig is quite an order. But a lot of farmers are well along in getting the job done. To cite a few:

Most of Bob Richardson's hogs now grade meat type. This Cass County, Ind., farmer changes off between Minnesota No. 1 and Montana No. 1 boars, markets 200 to 220-pound hogs at 5½ months.

John McCormick of Carroll County, Ind. gets a meaty, fast-gaining pig with a three-way cross of Hampshires, Poland Chinas, and Durocs. Both McCormick and Richardson get a 50-cent-a-hundred bonus for all the meat-type hogs they sell to Producers at Logansport.

The breed doesn't make the difference. You can get meat-type breeding stock in any breed. At the same time, not all so-called hybrid hogs are meat type.

**Too many top-cutting hogs** have not been bringing their true market value. And at the same time, too many of the short, over-fat kind have been getting a free ride. This will change, and the fat hog will be cracked. That's further reason why you should be changing the "style" of your hogs now.

Even if you can't get a price differential on your market now, the right kind of a meat hog will gain faster and cheaper than the lard type. That's bonus No. 1. And soon you'll be getting more market dollars for that kind. It's not too soon to start.

**New Modified Forage Harvester**—Power savings of up to 40 per cent are possible when cutting corn for silage with a new modified forage harvester, farm engineers at the University of Wisconsin report. The engineers say that by increasing the number of knives from four to six on a flywheel-cut machine, the speed of the cutterhead can be reduced one-third without changing the capacity or length of cut of the harvester. This reduction in speed results in a 40 per cent reduction in the total power required to operate the machine.

# *Let's Simplify Milk Inspection*

**Dairy research shows that many frills required of dairymen do not affect milk quality. . . .**

Condensed from Ohio Farmer

*W. W. Konkle*

OHIO EXPERIMENT STATION

YOU can take it from the National Research Council—many of our present sanitary milk controls are out-of-date. And, according to their recent findings, it's high time something be done to take out the unnecessary frills and modernize the whole set-up.

There is a need for only a limited number of basic requirements to insure a wholesome milk supply, the council says. Although some laws and ordinances are desirable, others are not essential and might better be recommended practices instead of required ones.

These statements are not mere opinion. They are backed up by actual research conducted by the best scientific minds in the country. The whole project is being hailed as the best thing to come out of the dairy field in a long time.

Back in 1946 the USDA recommended elimination of unsound economic practices in the distribution of milk. As a result, the agricultural board of the National Research Council requested the creation of a joint committee of that board and the Food and Nutrition Board. Purpose was "to deal with the milk marketing problem arising from sectional barriers and public health regulations."

Actual work on the project began with the signing of a contract between the USDA and the National Academy of Sciences — National Research Council. Director of the study was Dr. A. C. Dahlberg of Cornell University. He was assisted by associate directors H. S. Adams and M. E. Held.

Basically, the Dahlberg report includes a study of the

Reprinted by permission from Ohio Farmer, Cleveland, Ohio

sanitary milk control and quality of eight selected cities. It concludes that there is a need for only a limited number of basic requirements to insure a wholesome milk supply. Most significant factors in milk production and inspection of farms related to the sanitary quality of milk are:

- Prevention of contamination with disease-producing bacteria by providing a safe water supply, fly control, sewage disposal, and healthy personnel.
- Cleanliness of milk production to assure low bacterial count in both raw and pasteurized milk. Wash vats and hot water in the milk house are two items which should be required by city ordinances and state laws.
- Prompt cooling of milk to 50° or below. The study showed that bacterial counts were high when the night's milk arrived at the plant at a higher temperature. This means electric refrigeration the year around, except in cases where milk is delivered to the receiving plant immediately after milking.

Dahlberg and his co-workers could find no other factors associated definitely with the sanitary quality of the raw milk supply. Other items of sanitary milk production such as detailed specifications for construction of barns and milk houses, feed storage arrangements and walkways may be very useful in promoting the production of sanitary milk, but they should be recommended and not required.

To quote from the report: "Surely one could not expect research to show any relationship between the quality of milk and such regulations as the cow yard or milk house being a specified distance from the barn, the exact dimensions of barns and milk houses, the presence of flowing water in the barn, the means used for the efficient cooling of milk . . ."

Dahlberg states there is no proof the sanitary quality of milk is improved by straining regardless of where it is done. The removed sediment is insoluble, but the dissolved material which is not removed contains the off flavors and bacteria. Actually, some sanitarians suggest that the sanitary quality of milk would be improved if straining milk on the farm were prohibited instead of being required. In doing so, sediment tests at the receiving plant would be a good indication of how efficient a job the farmer is doing in maintaining cleanliness.

From the economic standpoint, one of the most irritating factors in sanitary milk control is the wide variance between cities as to regulations and codes. For example, the require-

ments in respect to milk houses were more costly to meet in Washington, D. C., than in Rochester, N. Y. Similarly, there were several requirements for dairy barns supplying milk to Washington that would have excluded milk from the Rochester milk shed.

Despite the wide variance in controls, these regulations were not a major cause of differences in the retail prices of milk among the markets studied. Mr. Dahlberg adds, however, that sanitary regulations should not be developed without regard to their influence on costs and prices. Public interests require that milk production costs be kept as low as possible, yet consistent with the maintenance of adequate safeguards of quality.

The best a dairy farmer can do Dahlberg believes, is to keep milk as good as it was when it was drawn from the cow. And the best that the milk processor can do is to keep the milk as good as it was when the producer delivered it to the plant.

Incidentally, the report shows that milk-plant requirements were more uniform, detailed, and rigidly enforced than those on the farm. This should be true, the scientists believe, for the processing of market milk should approach practical perfection.

Acceptance of the Dahlberg report has been excellent. This is a good omen, especially for farmers who seem to suffer most from the useless frills set up without any basis for their existence.

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## How To Control Cattle Lice

Inspect your cows and if they are infested with lice or other insects, use one of the following methods of control, veterinarians advise.

By spray—On a warm day, use eight pounds of a 50 per cent wettable DDT or Methoxychlor powder in 100 gallons of water. This equals from one-fourth to one-half cup DDT per gallon of water. Or, use one pound of 25 per cent lindane in 100 gallons of water. The veterinarian cautions farmers to use only methoxychlor on dairy animals, however, and never spray baby calves.

By dust—On dairy animals, use a 1.5 per cent rotenone dust. On beef animals, use a 5 to 10 per cent DDT dust (six to eight ounces per animal). Apply thoroughly in the region of the head, neck, tail and between the legs.

*North Carolina Extension*

# Artificial Breeding

## Remakes Our Dairy Herds

**Tremendous growth of artificial insemination will cause a big improvement in our whole dairy population. . . .**

Condensed from Agricultural Research

ARTIFICIAL Breeding has put our dairy cattle years ahead, says J. F. Kendrick, in charge of Dairy Herd Improvement Association work in US DA since 1933. He believes half a century of natural breeding couldn't have done as much for American dairy inheritance as artificial insemination has done in only 15 years.

With this technique, we are rapidly remaking the genetic structure of our 24 million dairy cattle, says Kendrick. By 1960, the results should begin to show up in higher national production averages.

Advancing methods and expanding organizations raised the number of artificially bred cows to about 5 million in 1953. There are 570,000 herds enrolled in the 1,600 associations operating in every State and Alaska, Hawaii, and Puerto Rico. Service is as near as the telephone for most of the country's herds.

Improvement in technique can be gauged from this fact: the average number of cows bred per sire increased from 228 in 1939 — when the first artificial-breeding association was organized in this country—to 1,848 in 1952. Certain outstanding sires have been used to breed 10,000 to 15,000 cows yearly. Even that is far from the limit now possible.

Spreading the influence of such outstanding sires is, of course, the main purpose of artificial insemination. And that's where it ties in with the testing work of Dairy Herd Improvement Associations.

Cow-testing began early in the century as a means of cull-

Condensed from Agricultural Research, United States Department of Agriculture, Washington 25, D. C.

ing low producers. By 1920, farmers here and there were using cow records to find good brood cows and good bulls. The practice of bull proving spread, and it became apparent that scattered records needed to be brought together in a uniform program. As a result, the nation-wide DHIA sire-proving plan was set up in cooperation with the States in 1935.

But improvement was slow business. After a sire was proved by the records from five daughters, he could pass on his superior inheritance to a mere 40 or 50 offspring a year.

Then, in 1938 E. J. Perry of the New Jersey State College of Agriculture brought back from Denmark the idea of artificial insemination. This was just what DHIA's needed. Use of artificial breeding by dairymen spread rapidly after the war.

The fact is that relatively few dairy bulls have the capacity to transmit to their daughters the ability to produce large amounts of milk and butterfat. Artificial breeding now makes it possible to multiply the service of such sires when they're found in DHIA herds. Of 2,600 bulls now used by artificial-breeding associations, well over a third have proved-sire records. Their daughters average more than 1,000 pounds of milk and 40 pounds of butterfat better than their dams.

These 2,600 sires are kept at 90 studs around the country. Such a battery of bulls — a hundred or more in some cases —is usually owned by a cooperative, but some studs are privately or state owned. Semen is rushed to local associations by many means, including air drops. Even State-police radio networks help in some areas by directing inseminators to farms where service is needed. In this way, the large and small dairyman alike can use a good sire for an average of $6 or $7.

Present studs, with modern techniques and fast transportation, have plenty of capacity to serve the whole country. A new association need only hire an inseminator and purchase semen from an established stud.

Research by State experiment stations and artificial-breeding organizations has resulted in stretching semen further, making it last longer, and getting it to distant farms in better condition. Attention is now being given to the possibility of saving all the semen from exceptional sires by storing it at subzero temperatures.

From 5 million artificially bred cows, we can expect 4 million calves a year. This means roughly 2 million new heifers with improved inheritance. At that rate, we'll replace many of the 10 million cows in commercial herds by 1960.

# Judging Sheep

## Step-by-step, how to do it right . . .

Condensed from Utah Fact Sheet No. 27

*Russell R. Keetch*

EXTENSION SHEEP AND WOOL SPECIALIST

SHEEP produce two valuable products—lamb and wool. Both of these must be considered in judging sheep. The selection, therefore, is somewhat different than in judging other types of livestock.

Judging of sheep requires an understanding of the various breeds and the score cards developed for the selection of each breed. The judge must make a constant study of the important portions of the sheep's body and the essential characteristics of various classes of wool.

The shepherd should make a daily practice of judging his sheep and analyzing their important features. He can well do this while feeding or caring for his flock.

Consistent judging and selection requires a system. Defects and disqualifications must be understood. The judge looks for these first. The observation may begin with the head. Look at the mouth to determine age of the sheep and the soundness of the teeth and mouth. Observe the eyes for vigor and freedom from infection; notice the horns and the ears. Study the face, neck, legs, pasterns, feet and body in general. Observe the fleece for off-colored fibers, density and uniform characteristics. The judge should handle the scrotum or udder to determine sex development, soundness and freedom from infections and mechanical defects.

After determining the stand-

Reprinted from Utah Fact Sheet No. 27, Utah State College Extension Service, Logan, Utah

ard of conformation, the judging for meat and wool production begins.

Common faults are inadequate observation and too much handling. It is a mistake to handle an animal before observing it at a distance.

**How to Proceed in Judging**

Study the sheep from a distance of about 15 feet. Establish a tentative placing while observing the class from the following positions:

A. **Side View**

Observe the length and depth of the body, set of the legs, low setness, compactness, strength of the back and loin, fullness of the heart girth, carriage of the head and neck and general neatness and symmetry of the animal. Body type and relative size are easily compared from this position.

B. **Rear View**

Observe the width of the back and body, smoothness over the shoulders, spring of ribs, width and fullness of the rump, thickness and development of leg of mutton and the twist, strength, and position (or set) of the hind legs.

C. **Front View**

Observe especially the features of the head and ears, the depth and fullness of the chest and brisket, width between the legs, the straightness of the forelegs and the size of bone.

**How to Handle During Examination**

Handle the sheep to verify your observations made from a distance.

A. Lay your hand flat on the animal and apply enough pressure to determine: (1) the depth and character of flesh covering; (2) the straightness of the top line; (3) strength of back and (4) depth and firmness of loin and back covering. Check these qualities by proceeding at the shoulder top. Note here the fitting of the neck into the shoulder. Notice if the shoulder is open or closed. On fat lambs move the hand from side to side when feeling the ribs to determine the covering and finish. (It is a good practice to repeat the entire process a second time.)

B. Place one hand on each side, keeping hands perpendicular to determine the width and thickness of the loin and the spring and covering of the ribs. Feel also over the thighs and the rump to note the smoothness of the hips and fullness of fleshing.

C. To determine the depth of body and the fullness of the brisket, place the right hand on top of the shoulder and the other below the chest or brisket.

D. Place one hand on top of the rump and the other hand under the twist to determine

**Score Card for FAT LAMBS**

| Characteristics being scored | Points |
|---|---|
| Size and weight (Market standards) | 10 |
| Leg of lamb (Very deep and plump) | 15 |
| Finish (sufficient) | 15 |
| Smoothness (Very smooth) | 15 |
| Width (very wide) | 15 |
| Depth of body (very deep) | 15 |
| Wool (very good) | 15 |
| TOTAL | 100 |

**Score Card for WOOL BREEDS**

| Characteristics being scored | Points |
|---|---|
| Breed type | 10 |
| Depth of body | 15 |
| Width of body | 15 |
| Length of body | 10 |
| Length of staple in relationship to fineness | 10 |
| Density of fibers (very dense) | 10 |
| Fineness of fibers (fine and uniform) | 10 |
| Character of fleece | 10 |
| Condition of wool (dirt, grease, moisture) | 10 |
| TOTAL | 100 |

**Score Card for MUTTON BREEDS**

| Characteristics being scored | Points |
|---|---|
| Breed character | 10 |
| Leg of mutton | 10 |
| Thickness of flesh | 10 |
| Depth of body | 20 |
| Width of body | 15 |
| Length of body | 15 |
| Smoothness | 10 |
| Wool | 10 |
| TOTAL | 100 |

the fullness, depth and firmness of the twist. While standing at the rear of the sheep, with the hand open and fingers close together and extended, t o u c h successive points not more than 4 inches apart along the top from the shoulders to the dock.

E. Grasp the leg of mutton with both hands to determine its size. (Place one hand on the flank side and the other at the back side of the thigh.)

### How to Examine the Fleece

Always keep your fingers close together. Place your hands flat against the wool, then open the fleece in a long straight part at a natural opening over the shoulder, side and thigh. It is essential to check these three places for length, fineness and uniformity. The covering of wool on the belly and about the arm pits and flanks should be checked. **Never open fleece on the back.**

### Before Making Final Decision, check:

**Type:** Type should be compact, wide and deep with full spring of ribs. Loin should be wide and thick, s h o u l d e r s smooth, and neck short and thick. Width should carry evenly from front to rear. The top and u n d e r l i n e should be straight, giving uniformity of outline. The body should be

long in proportion to its width and depth for the animal to acquire size and balance. The body should also be long from hip to dock and from armpit to flank.

**Smoothness:** The top and bottom lines should be smooth and even. The neck should be short and blend in with the shoulders. The shoulders should blend smoothly into the forerib. The sides should be neat. The hips should be well covered and smooth. All parts should be uniform to give the appearance of compactness and symmetry.

**Leg of Mutton:** A plump, thick leg is desired. Long shanks indicate less meat, resulting in reduced value and undesirable appearance. Thick fleshing is always a desirable factor.

**SOME USEFUL DESCRIPTIVE TERMS**

**Commending**

A plump leg of lamb.

A compact, closely knit frame; large, full heart girth, wide spring of rib.

Uniform in width, front to rear.

Low set, deep bodied, stocky.

A thick, meaty lamb.

Carries a deep, even, smooth covering of flesh.

Robust, alert, vigorous, highly finished.

A fatter animal, higher condition.

Evenly and uniformly fleshed.

Widespread, roomy middled ewe.

A strong well-wooled ewe, with longer, denser wool, uniform in fineness and length.

Wide, level rump.

Strong and wide, with thick, smooth fleshing.

Shorter, thicker neck, with a full shoulder vein.

**Criticizing**

A light, shallow leg of lamb.

Rangy, loosely knit body, pinched in the foreribs.

Narrow through the loin. Peaked over the back.

Upstanding, shallow-bodied and leggy.

Lacks condition and thin covering of flesh.

Patchy, unevenly fleshed, and loose over ribs and loin.

Lacking in size, vigor and constitution.

Lacks finish. Bare over ribs and top.

Overdone, soft and flabby.

A plain, narrow chested, shallow-bodied ewe.

A fleece lacking in quality, without uniformity in length and fineness; open fleece which shows black fibers or off color.

Sloping and peaked rump.

Easy in the back; rough hips, and bare ribs.

U-necked; open in the shoulders.

**Colostrum milk is an excellent feed** for dairy calves because it is rich in Vitamin A and antibodies which protect calves against infection. Purdue University dairymen say that when surplus colostrum milk is available, it may be frozen and kept in a deep freeze until needed.

# Production Testing of Beef Cattle

**Someday a testing program to identify profitable beef cattle may be as standardized as D.H.I.A. . . .**

Condensed from
Oregon Bulletin 746

*Ralph Bogart and James T. Elings*

## What It Is

PRODUCTION testing of beef cattle is based on two simple facts: (1) Individual beef animals differ in their ability to put on gains; (2) Rate of gain is an inherited characteristic that is transmitted from sire and dam to offspring. By selecting breeding stock with ability to put on rapid gains, it is possible to produce fast-gaining calves. Since the sire contributes half the inheritance of every calf, selection of fast-gaining bulls is particularly important. The objective of production testing is to establish records of gains so that promising animals can be identified.

Production testing is a research- and breeder-proved method of improving beef cattle that can be put into practice by any breeder. Production testing is useful to the purebred breeder in his culling and selection program. The breeder also is able to accumulate records that make it possible to progeny test his sires. It provides him with useful records. It enables his customers (bull buyers) to select not only on conformation, but also on rate of gain and efficiency.

At the present time, comparison of animals raised on the individual ranch is more important than the comparison of animals raised on different ranches. Some day a testing program for beef cattle may be as well standardized as is dairy production testing. Then it will be possible to select with confidence from records of production testing made on more than one ranch.

The commercial beef produc-

Reprinted from Oregon Extension Bulletin 746, Oregon State College, Corvallis, Oregon

er is looking for bulls of desirable conformation and with good production records. In those purebred herds in which production records have been kept, he can select bulls on the basis of these records, as well as conformation. Selection of a bull with better than average daily gains will provide the commercial operator with a bull that will sire calves possessing about 80 per cent of this advantage in gaining ability.

**Points to Consider**

**Birth weights** — Weighing the calf sometime during the first few days after birth will not only give the breeder a help or tool in his selection program, but also birth weights are necessary in computing the rate of gain from birth to weaning.

Big calves are more likely to survive, gain faster, and require less feed for each pound of gain than calves that are small at birth. Early calves that are big at birth are ready to make greatest use of grass in the spring. They also use to advantage the greater milk flow stimulated in the cows when they go on pasture or spring range.

**Weaning weights** — Heavy weaners are desirable because they bring a higher return and are in demand by feeder buyers. Big weaners winter better.

Heavy weaners are indicative of a factor important in beef cattle selection—the milking ability of the cow. The daily gain up to weaning can be calculated by subtracting the birth weight from the weaning weight and dividing by the age in days.

> Weaning weight less birth weight divided by age in days equals daily gain of suckling period.

This gain from birth to weaning is a reliable indication of the milk produced by the cow and to a lesser extent the growthiness of the calf.

**Yearling weights** — Gain during the period from weaning to the yearling age is the most important measure of a calf's ability to grow and gain rapidly and economically. Faster gaining calves put on these gains with less feed per pound of gain than slower gaining calves.

The daily gain during this period can be calculated by subtracting the weaning weight from the yearling weight and dividing by the number of days from weaning to yearling age.

> Yearling weight less weaning weight divided by days from weaning to yearling equals gain during growing period.

This figure is useful particularly if all the calves have all they can eat during this period. It is believed now that much of the difference between fast and slow gaining calves is due large-

ly to appetite and capacity to handle feed.

The feed during this important growing and testing period need not be a fattening ration. For comparing calves on rate and economy of gain, a ration of two parts legume hay to one part concentrate is satisfactory. A ration containing a higher proportion of grain would result in fatter calves that might make a better appearance.

**18-month weight**—The gains made from the yearling age to 18 months is another tool in beef cattle selection. In many breeding establishments this period will come during the second summer of the animal's life, and these gains, for the most part, will be made on grass.

These gains are indicative of the animal's ability to eat large quantities of feed, to go out and rustle that feed for itself, and its ability to gain on grass. They provide a record of its gains up to maturity.

The commercial beef producer wants to produce cattle that will finish out at almost any weight and age. The popularly accepted kind to accomplish this are the medium type with smoothness and good weight for age. The animal that makes good gains through the yearling age and then slows up should be discriminated against, because the offspring can be expected to do the same thing.

To calculate gains during this period, subtract the yearling weight from the 18-month weight and divide by the number of days of the period.

18-month weight less yearling weight divided by days equal gain per day.

**Grades or scores**—The market price of our cattle is based largely on grade. Quality in beef cattle production is every bit as important as pounds of meat. Consequently, selection must be made on the basis of grade as well as gain and efficiency.

Conformation, quality, rate of gain, and efficiency are important inherited characteristics. It behooves the breeder, then, to include a grading program in his production testing program, selecting animals that will produce desirable carcasses. It is suggested that animals be graded at weaning, as yearlings, and again at 18 months before being selected as replacements.

The progressive breeder will strive to produce and select animals that grade high and are good doers.

**Regular breeding** — Each breeder wants every cow in his herd to conceive readily and produce a calf every year. Fertility is measured by the ability of the cow to settle when she is bred, and to come into heat after calving so she can be re-

bred for regular yearly calving.

Select replacement heifers out of cows that are early calvers and regular breeders. Some cows tend to establish a pattern of late calving and will calve late, even following a miss of one year.

If feed conditions are adequate, a breeder is justified in culling cows that fail to settle. Greater leniency is necessary when feed conditions are not adequate. Certainly cows that do not produce a calf for 2 years should be culled, no matter what conditions are.

Breeders should also consider palpating their cows for pregnancy. This requires experience, but training can be obtained from your veterinarian or other experienced personnel.

**Setting Up a Testing Program**

Production testing is something the individual breeder can do in his own herd, provided he has the few requirements to put the program into operation and to continue it.

**Livestock scales** — Any scales that will give reasonably accurate livestock weights is adequate. In purchasing scales, the operator may want to take into consideration other possible ranch uses for the scales before he makes the investment. Regular individual weights of all cattle are necessary in a well-rounded production testing program.

**Records** — Any improvement program is no better than the records kept by the breeder. A cow record sheet has spaces to identify cow and record birth, weaning, yearling and 18-month records should be set up.

● **Grades.** Some system of scoring or evaluating each individual animal's conformation is necessary. Animals need to be culled on the basis of grade or score as well as gain.

● **Daily gain and efficiency.** Most breeders will be equipped to get daily gain records only. To get feed efficiency records of an animal for any period of time, it is necessary to have an accurate weight of every pound of feed consumed by each individual animal. However, research and feed utilization tests have indicated that high gainers tend to be the most efficient. If it's not possible for a breeder to get feed efficiency records, daily gain records certainly are much better than no records at all.

**Management** — The breeder following a production testing program will of necessity be a good manager. To obtain accurate gain records of his cattle will require observing his stock closely at all times. The breeder may have to adjust his operation and management practices from time to time to make the best use of the testing program.

For an animal to make maxi-

mum gains during a testing period, it needs to receive care and consideration as an individual. In a group of young bulls penned together there are always one or two or more that may not receive the full share of feed because of the aggressiveness of the pen mates. The removal of the less aggressive bull or bulls to another pen may be the solution in that case. Or, if hay and grain are fed separately, tying the bulls during the grain feeding period should be considered. (This practice would halter break them and make them much tamer for easier handling at sale time, etc.)

Another factor to take into consideration is the fact that some animals are much faster eaters than others. If grain is hand fed to a group of bulls during the testing period, from weaning to yearling ages, it is possible that one or two of the faster eaters would get most of the grain. There again, tying or separation would be necessary.

It may be that some breeders will be equipped to mix their hay and grain together and feed free-choice. Others will feed pelleted feeds of hay and grain. Still others will feed hay free-choice and hand-feed grain or concentrates. In each instance it will be up to the individual breeder to manage his animals so that his production records will mean something to him.

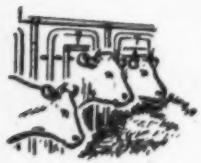
## Depression Not Underway—Only Large Abundance, Says Economist

We need to bear in mind that the drop in farm prices of the past three years is not caused by depression conditions in our economy, but mainly by abundant and over-abundant farm product supplies, said O. B. Jesness, head of the University of Minnesota's agricultural economics department. He said farmers need to adjust their production programs more wisely in order to avoid wide swings in cattle, hog and sheep production — with consequent wide-swing changes in the market and price structure.

Jesness said, "It is clear we cannot continue to raise high numbers of cattle and expect high prices." We need to adjust cattle numbers—but not too far downward, which may later encourage another big expansion, he said.

On the butter production and storage situation, the University economist said farmers cannot hope for public approval of continued buildup of stored butter—much of which may later deteriorate and go to waste.

*Minnesota Extension*



# Preserve Grass With Bisulfite

**It comes out of the silo bright green and sweet-smelling. Even the cows like it better, say farmers. . . .**

Condensed from Pennsylvania Farmer

*Robert H. Williams*

"IT'S THE best grass silage I ever made." We heard statements like that from farmers in all parts of Pennsylvania this winter. They were talking about fresh green grass, preserved with sodium meta-bisulfite.

The bisulfite, a white powder, was sprinkled on the grass either at the blower elevator, or at the harvester in the field. When it came in contact with the crop moisture, it dissolved and preserved the grass much the same as sulphur dioxide gas.

This old chemical was assigned the new job of preserving grass silage by specialists at Pennsylvania State College. In 1952, sodium meta-bisulfite was tested on three commercial farms in Pennsylvania. By 1953, hundreds of farmers had heard about it through demonstrations conducted by the research workers in cooperation with the Extension Service and had tried it for themselves. Penn State folks estimate 1,000 silos in the Keystone State were filled with bisulfite-treated grass silage during the big mow down last spring. The results they got are now under study.

One fan is Francis Fulton, manager of Llan Fair Farms in Schuylkill county. He figures their grass silage would have been a complete failure if they hadn't used the bisulfite powder. An equipment breakdown held up silo filling on this all-grass farm and the orchard grass - alfalfa mixture that finally went in the silos was overmature. Despite this, says Mr. Fulton, it was "still the best silage we ever made." And they make between 300 and 400 tons annually.

Reactions of other farmers who tried bisulfite are much the same. They like the fresh clean odor and bright green color of the silage; and they emphasize

Reprinted by permission from Pennsylvania Farmer, Pittsburgh, Penna.

the ease of applying the powder to the grass.

In any event, they say, sodium meta-bisulfite is cheap insurance. It takes 50 cents worth of the powder to preserve a ton of grass compared to over $1 for molasses and $3 to $4 for corn chop at present prices. But returns from bisulfite can be phenomenal.

At the University, for instance, four wood-stave silos were filled with a mixture of alfalfa and brome grass as the alfalfa started to bloom. The mixture in two of the silos was treated with bisulfite at various rates, and in a third with 70 pounds of molasses per ton. The fourth was untreated.

Specialists found that where no preservative was used in this test, loss of dry matter was 30.6 per cent as compared to 12.8 per cent for the silage treated with 7.5 pounds of bisulfite. This alone amounts to a saving of a dollar per ton after the cost of the chemical is subtracted, or $100 for many a Pennsylvania silo. Further savings were revealed in the digestion trials. The bisulfite-treated silage had about ten per cent more total digestible nutrients. This gives the farmer a grand total of $117 more feed in a 100-ton silo.

In these trials they noted that much of the food value of the molasses in the third silo was lost in the fermentation process.

Get close to a silo filled with bisulfite-treated grass and the owner's first impulse is to stick a handful of the stuff in your face.

"Look," he says, "no stink."

One dairyman claimed his grass silage in the pre-bisulfite days was "strong enough to walk." The silage we whiffed this winter was like fresh-chopped grass.

That is why Alva Saufley, Dauphin county dairyman, feeds his bisulfite-treated silage any time he wants. Because it lacks the pungent odor of ordinary grass silage, he has no fear of his milk being rejected — or himself being banished from the house by his wife.

How about the ultimate consumer, the cow? According to careful tests at the College, they prefer bisulfite-treated grass silage to the untreated fare by a four-to-one margin.

We talked to Caspar Kohler, young Dauphin county dairyman, about consumption. He fed his cows 150 pounds of bisulfite-treated grass silage a day in the early fall without any obvious ill effects. It was the only roughage they got. At the time of our visit, he had cut his grass silage feeding back to 125 pounds per cow per day and added five pounds of hay to the daily ration.

Another dairyman, Earl Wagner of Schuylkill county, feeds about 40 pounds per day to his Holsteins. He had two silos filled with bisulfite silage and one with grass treated with the straight sulphur dioxide gas. His cows didn't mind the switch from corn to bisulfite grass, he said, but they held back some on the switch from corn to the gassed grass.

"Took them about a week to adjust to that change," he commented.

And Carl Brown, herdsman at Llan Fair Farms, says their Guernseys seem to clean up the bisulfite-treated grass b e t t e r than either the untreated grass silage or grass silage preserved by other methods.

One obvious reason for this preference by the cows is the higher sugar content of grass preserved by this new method.

In a comparative test between bisulfite-treated and untreated grass silage, U. S. D. A. chemists found the treated silage retained twice as much natural sugar.

Mr. Saufley has been making grass silage 14 years. He can remember two years when he had silage equal to the bisulfite-treated grass he is feeding his Jerseys right now. But this points up what experts say. Under ideal conditions, they like to stress, no preservative is necessary—and never was. Not even when it was made several thousand years ago by farmers along the Mediterranean Sea. These people stored their grass in pits known as "siros" or "silii."

When untreated grass goes into the silo, plant breathing continues and the temperature of the silage rises. The forage settles and forces out the air. As the oxygen is replaced with carbon dioxide, lactic-acid-producing bacteria takes over. Now we quote the U. S. D. A.'s bulletin "Developments and Problems in Making Grass Silage": "Warmed to a suitable temperature (80 to 100 degrees F.), with sufficient moisture present (65 to 75 per cent or more) and with sufficient sugar available in the forage juices, these bacteria multiply many 'billion fold,' producing the lactic-acid characteristic of good silage . . . If sufficient lactic-acid is produced, undesirable fermentation will be largely prevented, and the silage will be of good quality.

Note the "ideal conditions!"

Evidently Mr. Saufley came close to those ideals of weather, c r o p maturity and moisture conditions on two of his first 13 years. However, he missed those ideals the other 11.

Penn State workers point out that this new preservative merely stretches the range of conditions under which good grass silage can be made. But it does the stretching with less fuss and

expense than other preservatives.

In Mr. Saufley's case, he had to cut early. The alfalfa-grass mixture was immature. Add a wet, cool spring and he had a problem.

Here's what might have happened if he hadn't used the bisulfite powder:

Due to the immaturity, the amount of natural sugar in the mixture would have been low. Thus the bacteria that produce lactic acid would lack the food needed for rapid multiplying, and little lactic acid would have been made to preserve the grass naturally. Add another enemy of good silage under these conditions—the high protein content of immature grass-legume mixtures. This concentration of protein tends to resist the necessary acidification of the silage. What happens? The wrong bacteria take over and start moonshining the "characteristic" odor so familiar to grass silage makers in the past.

"This vicious cycle, once started, can result in very high if not total loss, under extreme conditions," say researchers.

Mr. Saufley didn't want to risk this unhappy ending so he sprinkled eight pounds of the bisulfite on each ton of grass at the blower. Plant breathing and bacterial action was reduced by the action of the dissolved bisulfite and the silage preserved with a low fermentation rate.

Says Mr. Saufley: "We didn't have to stop our silage making. We just kept going until we had it all in." A fertilizer attachment from a corn planter was used at the blower to add the bisulfite uniformly to the grass. When he applied the straight gas in previous years, he explained, he had to stop every few feet of fill in order to inject the sulphur dioxide.

We understand several companies are planning to put bisulfite distributors on the market this spring. Plans for converting fertilizer drill attachments are available from the University.

Mr. Saufley says bisulfite was not only easier than the gas but better. Like many another farmer we talked with, he didn't uncover the bleach and spoilage pockets which were so prevalent in his gas-treated age.

Caspar Kohler, who lives a couple of miles from the Saufley farm, put his bisulfite powder on the grass right in the field. He rigged a lawn seeder attachment to his field chopper. At least one company has now perfected a distributor to use in the field. Mr. Kohler's lawn seeder did a good job once he got it adjusted, some 600 tons, in two trenches. Most of the silage was excellent—good color and odor —but there were some bad spots near the bottom.

Actually, bisulfite seems to work better in uprights than in trenches and stacks, silage experts say. That holds true for other preservatives, too. Studies are still incomplete on this.

Preservatives have been used in the uprights at the Barton R. Biever farm in Schuylkill county for a number of years. Corn chop and molasses were both tried before the advent of sulphur dioxide gas. That was used two seasons but was considered too dangerous to handle. This past spring, says Farm Manager Joe Fetterolf, they were ready to go back to molasses despite the cost. In fact, the order had been placed when they heard about sodium meta-bisulfite. They tried it, like it fine. According to Mr. Fetterolf, they lost four manure spreader loads off the top of the silos when gas was used. Toll this winter was two spreader loads. And they haven't run across many pockets of spoilage, either.

He showed us some gaudy green grass that looked more like May pasture clippings than mid-winter grass silage.

It's hard to put a dollar value on green color—it does mean more carotene and thus more of that important vitamin A. But, according to some grass specialists, even ordinary grass silage has enough carotene for normal milk production.

Mr. Fetterolf didn't stress color, however. He stressed the h a z a r d of using straight gas. And all the other fuss and bother that went with it.

It was such comments as these that started the Department of Animal Nutrition at Penn State searching for a new preservative back in 1951.

There was no getting around the danger of handling highly compressed, poisonous gas, especially by u n t r a i n e d farm hands. Then, too, the gas had to be piped through rubber tubing into the dizzy heights of a silo.

And they had yet to find a farmer who liked the "tedious and time-consuming chore" of climbing into a silo after every few feet of filling—holding up the whole operation for 20 to 30 minutes while levelling, tramping, and injecting the gas.

The handling and returning of cylinders — with the extra bookkeeping and expense of handling deposits and return freight—was an added headache which discouraged distributors as well as farmers.

It was during one such discussion with Dr. J. W. Bratzler on sulphur dioxide gas that Bob Cowan, a young research worker at the University, came up with the b i s u l f i t e idea. He had worked with sulphur dioxide at General Foods in the early 40s. It had been used for many years to preserve human foods—espe-

cially dehydrated and fresh fruits.

"When we wanted sulphur dioxide at General Foods," he says, "we always reached for the bisulfite bottle. The straight gas was never considered."

A search revealed bisulfite had never been tried on grass silage. Tests were quickly begun. First, grass was put up in glass jars. While both the plain and sulphur dioxide-treated silages spoiled rapidly, the bisulfite silage remained fresh and green. Later the same year, the Department of Animal Nutrition borrowed a couple of cement sewer pipes and rigged up model silos. Again, grass treated with bisulfite showed up best.

Folks began to sit up and take notice.

Came 1952 and the big tests—real silos under average farm conditions. Only a few were attempted. William H. Geist, Centre county, became the first farmer in the world to put up grass silage preserved with the promising powder. He filled his concrete stave silo with alfalfa and timothy cut before the alfalfa began to bloom. Bisulfit was applied at the rate of eight pounds per ton. It came out of the silo a nice green, and had a sweet odor. His herd of Jerseys and Holsteins went through it with relish—at a rate of about 60 pounds per cow per day.

One of the first things Mr. Geist noted was it didn't rust the handling tools as quickly as some of the other preservatives.

"It does not have as much acid," he says.

By 1953, the surge was on. The University had intended originally to keep it on test another year to see how it went under more varied conditions. But many farmers jumped on the band wagon without further ado. Before the stampede subsided, about 1,000 silos in Pennsylvania were filled with bisulfite silage.

Many farmers, after seeing bisulfite work, are planning to build additional silos.

**Precautions**

No matter how good a product is, however, certain care must be taken to make it work. In Progress Report No. 99, University men list these precautions for bisulfite:

1. Do not use wilted grass!

2. Regulate rates of application as carefully as possible at eight pounds of bisulfite per ton of freshly chopped grass.

3. Do not try to keep a man in the silo while the blower is in operation. An occasional burst of undissolved powder could be blown into the silo. While not dangerous, it could be irritating to the nostrils and eyes.

# MODERN FARMING—F.F.A. STYLE

**Flathead Chapter operates a farm and owns lots of machinery . . .**

Condensed from The Western Farm Life

*Wilburn G. Pickett*

LEARNING to Do, Doing to Learn, Earning to Live and Living to Serve"—the motto of the Future Farmers of America, and a motto which the Flathead Chapter of FFA in Kalispell, Mont., exemplifies in all of the chapter activities.

Chapter members of this northern Montana group practice their crop farming and farm mechanics on a 93-acre farm which it leased four years ago from Flathead County. The acreage was originally the county hospital poor farm.

When the Future Farmers began operating the farm it was in the worst possible condition. The land is owned by the county and prior to a long-time lease offered by the FFA chapter, it had been leased to various operators who had done nothing to keep the land productive. Yields were so poor when the chapter took over that it produced only 6-10 bushels of grain to the acre. In four short years the chapter has built the grain land up to a maximum of 140 bushels per acre of barley.

But taking over worn-out farms is just one of many accomplishments of this active chapter. At the national convention of Future Farmers of America in 1952, the Flathead chapter was awarded its 10th gold emblem award, the only chapter in the United States which has won more than five gold emblem awards.

At the time the chapter se-

Reprinted by permission from The Western Farm Life, Denver, Colorado

cured the farm, it was figured they would need at least $7000 of new capital in order to purchase a complete sprinkler irrigation system, obtain tractors and machinery, purchase fertilizers, pay for electricity for irrigation and pay the wages of the chapter member who was chosen as the operator for each succeeding year. The chapter was incorporated and members purchased $2100 in $10 memberships. An additional $5000 was borrowed from a local bank.

**Major Seed Producers**

A good portion of the note has now been paid off and the chapter now owns a Farmall C tractor, Ford tractor and attachments, cub tractor and equipment, a complete sprinker system and a D-6 Caterpillar. In addition, they own a combine, chapter bus, and half interest in a 1½-ton truck.

In the four years of farm operation by the chapter, they have reduced the alkalinity and raised the yields so that the farm is well above the county average. To reduce the alkalinity on the farm, the chapter pioneered in the use of sawdust and nitrogen. The members put on demonstrations to point out to older farmers the advantages of fertilizers and proper crop rotation. Businessmen and farmers watched the chapter farm with much interest, and it wasn't too long before Flathead County farmers began using practices similar to those employed by the FFA boys.

The farm is now one of the major producers of certified seed in the county. The past year the chapter had foundation, breeder, registered and certified seed crops sowed. The seed crops raised last year, and the acreages, were: Ranger alfalfa, registered, 33 acres; Lincoln brome, certified, 23 acres; Pilot spring wheat, certified, 10 acres; Park oats, registered, three acres; Empire birdsfoot trefoil, foundation, three acres; creeping red fescue, certified, seven acres; orchard grass, foundation, seven acres; Kenland clover, foundation, seven acres.

Last year chapter members raised 40 acres of Titan barley which produced over 100 bushels to the acre. Eighteen acres of certified Lincoln brome grass produced 5960 pounds of seed. They planted the foundation Kenland clover last year. The rest of the land on the chapter farm is usually in alfalfa hay production, or in summer fallow in order to control perennial weeds.

In some respects the chapter farm serves as an experimental farm for Montana State experiment station, which operates the Montana seed laboratory, due to the placing of foundation seed on the farm. At present, Flathead County Agent W. W. Mauritson is running an alfalfa

irrigation test on the farm with the work done cooperatively by him and the chapter.

Overhead on the FFA farm is relatively low due to the fact that all of the work is done by chapter members. Another factor in keeping down costs is efficient and economical management. Electrical costs for operating the sprinkler system run a little over $600 per year. A tributary of the Flathead River runs alongside the farm so that all the boys had to do was put a large pipe into the river and install the pumping equipment on the bank.

The chapter is proud of the fact that it won third place in last year's state soil conservation program, proving the ability of the young farmers to get the most from the land and still keep it productive. Good management practices such as grazing a field of brome after taking 40 bushels of seed to the acre and cutting three to four tons of hay per acre are common with the boys.

Management of the farm is handled cooperatively by the chapter, but work during the summer months is handled by a member chosen by the chapter. This man is paid a standard salary agreed upon by all stockholders on the farm, and so much per hour for all hours worked over an eight-hour day. All other work on the farm requiring more than one man is done by the chapter. The chapter boasts 100 percent participation in all chapter activities and this holds true when it comes time for a major job on the farm, also.

**America has switched from a "pork" to a "beef" eating country. Per capita beef consumption increased from 61.2 pounds in 1952 to 74 pounds in 1953, while per capita pork consumption decreased from 71.6 pounds to 60.5, with the over-all meat consumption about 148 pounds.**

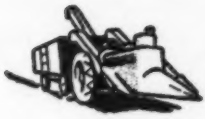
* * *

A large new building used solely for vocational agriculture is pointed out with pride by chapter members and advisors. A large chapter, it reached at one point a membership of 114, thus necessitating three advisors: Henry Robinson, Luther Lalum and R. A. Olson.

Robinson was instrumental in organizing the Canadian FFA chapters and the past few summers he has been teaching at the University of British Columbia and doing more work organizing the chapters in our neighboring country.

Flathead County high school and residents of the county are proud that the chapter has been acclaimed as one of the most outstanding in the United States.

# When To Buy New Farm Machinery



**Any time is the right time, say University of Minnesota men, provided better crop quality and cutting hours of labor will pay the costs. . . .**

Condensed from The Farmer

WHEN is the best time to buy new machinery? This year? Next Year?

Anytime is the right time, IF you can make the machine pay its way, say University of Minnesota farm economists. Year and model are important, but the big factor is cost return.

A machine must return 20% of its original cost each year—through time saved and work accomplished — to be an economically sound investment.

That's what Economists S. A. Engene and Niels Rorholm have found from studying farm records.

On a $2,000 combine, that makes the yearly cost $400. To break even, an amount equal to that yearly cost must be returned from the combine. How? By (1) saving labor — generally mechanization has saved 1,000 hours per year for the average Minnesota farmer; (2) timeliness — getting the job done at the right time and increasing the work output from one operator; (3) product improvement — reducing weather spoilage or shatter loss through faster harvest; (4) custom work for neighbors — the only direct cash return from owning the machine.

Thus, before making an economically sound investment in a major farm machine, you need to figure expected return in relation to each of those points. Then measure your present financial position against future prospects. If you can afford to tie up the cash needed to buy the new item, go ahead.

Once you do get a full line of crop machinery, figure on it costing you about $6 annually per crop acre to keep it up. That was the average machinery depreciation and upkeep cost of 33 Southern Minnesota farmers operating 220 acres each in 1952.

Yearly costs can be trimmed, however. One farmer spent

Reprinted by permission from The Farmer, St. Paul, Minn.

$2.09 per acre on machinery, while another spent $14.09 the same year. Seven of the 33 farmers studied had costs of less than $4; five had costs of more than $9.

You can do a trimming job by following these and the points discussed above:

- Own any particular machine only if you have enough to justify it. Farmers with small acreage, for example, can often get their corn custom picked for $4. Records show it costs $5 per acre with an operator-owned picker.
- Where you can't justify a new machine, buy a second-hand one. Remember, two-thirds of the yearly cost is tied up in depreciation against original investment.
- Do custom work to help pay for expensive machines.
- Buy little-used machinery in cooperation with neighbors.
- Operate machinery carefully and service it properly for long life. The more years service you get, the farther you spread annual depreciation.

## Spring Fertilization Will Aid Bluegrass

Spring fertilization and proper grazing will help offset dry weather damage to permanent pastures an extension agronomist advises.

E. P. Reed at Ohio State University, warned, "Over-grazing during the spring of 1954—before weakened plants have had an opportunity to make some growth and build a root system—will greatly decrease the total production from bluegrass pastures.

"March applications of a straight nitrogen fertilizer or a complete fertilizer high in nitrogen will increase spring growth and offset much of the ill effects of adverse weather during the summer and fall of 1953." For straight nitrogen, Reed suggested 60 pounds of nitrogen an acre on fields previously treated with phosphate and potash. He suggested 600 pounds an acre of 10-10-10 as a complete fertilizer.

The agronomist explained that hot, dry weather last fall and summer limited bluegrass recovery following its summer dormancy. A few bluegrass plants may be dead. In most cases, however, there are enough rhizomes and buds to maintain a satisfactory stand of bluegrass if it receives care this spring.

Rhizomes are underground stems and one of the methods by which bluegrass spreads.

*Ohio State University*

# HOW TO BUY AND SELL A FARM TAX-WISE

**An expert on farm taxation offers valuable advice to those who buy and those who sell farms. . . .**

Condensed from Successful Farming

*Jack R. Miller*

TODAY it isn't enough to simply agree on price, terms, and possession date in buying or selling a farm. What with the tax bite chewing up part of the sale price, the tax angles have become more and more important.

But even the latest tax laws leave you several ways to save money in the transaction. However, you can't just forget about tax savings until the income-tax-return season rolls around, almost a year after possession date, and get the greatest saving.

### Buying A Farm

The main thing to consider, when you buy a farm, is to put the right values on the items that can be depreciated later on your income tax. This means figuring what part of the purchase price was paid for buildings, wells, fences, tenant house, and so on. Then you have a base for claiming the most depreciation possible on these items on your income-tax return.

The job of allocating the purchase price among the various parts of the farm—for land and items that can be depreciated—is not one for you or your tax-return maker. **It's a job for a real-estate expert.** A local banker or real-estate broker, by virtue of his experience, can usually qualify as an "expert." The reason for getting an expert is that you want someone whose opinion can withstand any onslaughts by an internal revenue agent later on. Here's what to do:

You should request your ex-

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pert to make a personal inspection of the farm and prepare an ALLOCATION REPORT. On the report he should list the **estimated life of each item that can be depreciated, as well as the amount allocated to each item or part of the farm.** This report is your basis for depreciation you will claim on your income-tax returns the next few years.

You should pay a fee for the service not only for the expert's time in preparing the report, but to keep a revenue agent from claiming the report was not prepared in a regular, businesslike way.

The report itself can take any of a number of forms, but should always contain information of the type shown in the following example:

**Farm Price Allocation Report**

This report concerns the following farm located in ..... County. (Give a legal description of the farm.)

Based upon a personal inspection of the property, it is my opinion that a purchase price in the amount of $..... is fairly allocable to the various assets of the farm as follows:

| Item | Portion of price allocated | Estimated life |
|---|---|---|
| —— acres of land | _____ | |
| house | _____ | _____ |
| barn | _____ | _____ |
| machine shed | _____ | _____ |
| silo | _____ | _____ |
| crib No. 1 (wood) | _____ | _____ |
| crib No. 2 (steel) | _____ | _____ |
| hoghouse | _____ | _____ |
| chickenhouse | _____ | _____ |
| ——rods of fence | _____ | _____ |
| well | _____ | _____ |

Allocation has been made on the basis of relative values of all of the above, taking into consideration the present condition, quality, and prices being paid for improved and unimproved land in the vicinity of this farm.

Very truly yours,
(Signed by your expert)

.....

You cannot take a depreciation deduction on the house if you and your family occupy it—unless hired help is roomed in it, too. However, if the house is turned over to a tenant later on, it becomes available for depreciation. So an allocation to the house should be made, along with its estimated life.

Here's another tax pointer to keep in mind in buying a farm. If property taxes for the current year already have been assessed against the farm, the buyer should arrange to have the seller pay them. That's because, under the tax law, the buyer will not be permitted to deduct them as an expense when he pays his income tax for that year's income. **The tax law says that they are the seller's taxes and only the seller can take the deduction!**

### Selling A Farm

If you are planning to sell a farm, one of your major worries will be over the amount of income tax you will have to pay on the profit.

If you have owned the farm for more than 6 months, the profit will be long-term capital gain, which means only half of your profit is taxable. But even that may be large enough to pose an income-tax problem.

Taxpayers in high tax brackets often make such sales on an installment basis. They take up to, but no more than 30 per cent of the sale price in the year of sale and spread the balance over several years. (The law says you can't make more than 30 per cent of the total selling price the first year and still call it an installment sale.) That way they pay taxes on only a part of the profit each year—instead of all in one year at what may be a high tax rate. They can do this since the profit is spread over the years in proportion to the size of the payments received. Only the part of the profit you get each year will be reported.

**The 30-Per Cent Limitation**

This is a strict one, and consequently you must be clear on what is meant by the "year of sale." The word "sale" means that either title or possession has been transferred. A mere down payment at the time of signing a contract to purchase is not a payment on a "sale," and need not be reported until the year in which the title or possession is transferred to the buyer. Generally, such a down payment is added to the payments in the "year of sale" to determine whether the 30-per cent rule has been violated.

Here's another point you should watch if you sell a farm: Possession is usually transferred on March 1 of the year after the purchase contract is signed. But the tax law now makes it worthwhile to consider transferring possession before the crops are harvested—if the buyer will pay you a fair price for the crops. If you have owned your farm for more than 6 months, the profit from its sale will be long-term capital gain. Also, any profit that comes from unharvested crops will be treated as long-term capital gain. The tax-saving possibilities will appear from the following example:

Mr. Brown has an unharvested crop of corn, which will bring an estimated $9,000 when harvested and sold. Assuming he is in a 30-per cent bracket, his tax on the crop would be $2,700—leaving him take-home cash of $6,300.

However, the purchaser of his farm will pay him $8,000 for the crop in its present condition. That way only half of this price—or $4,000—will be subject to tax at 30 per cent. The tax comes to $1,200 and leaves him take-home cash of $6,800. Thus, by selling his farm with the unharvested crops, Mr. Brown will save $500.

The law says that expenses of raising a crop sold with the

land must be figured as part of the selling price of the farm. This, of course, will reduce the operating expenses for the year. However, if farm income from other sources hasn't been great, such a reduction in expenses will make little tax difference. Also, keep in mind that figuring the expenses as part of the farm sale price will decrease the long-term capital gain.

**Sell And Buy, Same Year**

If you sell one farm and buy another the same year, you should watch this point. As we pointed out, if you've owned the farm 6 months you can claim capital gains on it. If you buy another farm that year, the part of the profit that is allocated to the farmhouse, and is reinvested in the house on the new farm, is not taxable.

The mere fact that all of the proceeds from the sale of the first farm are reinvested in another farm won't relieve you from tax on the profit allocable to items other than the farmhouse.

## Hock's Beef Cows Watch Their Figures

Beef cows in Joe Hock's herd watch their figures if they want to stay with Hock, according to John Moore, Madison County Ohio extension agent. Hock weighs calves every 2 weeks for at least 100 days. He uses these weights to select brood cows and heifers.

He finds calves from some cows gain 2 pounds daily, while calves from other cows gain only 1¼ pounds daily on the same feed. Hock says fast gaining calves make the most profit. He has one cow-family in which both daughter and granddaughter have averaged over 2 pounds gain per day.

Some of his cows produce calves that make good gains in the feed lot, then keep right on gaining when they go to pasture. Others slow down when they go on pasture. His figures also show calves make slower gains on poor quality hay than on good quality hay.

In the feed lot, his cattle get equal parts—by measure—of coarsely ground ear corn and whole oats. He adds protein supplement to give each animal 1 1/3 pounds daily. His protein supplement is a mixture of linseed oil meal, cottonseed meal, and soybean oil meal. One-third of the mixture is linseed oil meal and the other two are varied depending on price.

In the future, Hock plans to use his figures to prove bulls as well as select cows. He has one 800-pound bull that averaged 3 pounds daily gain for 100 days.

*Ohio State University*

# *Weed And Insect Control In Corn*

**Abstracts from talks given before Pacemakers Corn Club, 1954 Meeting**

## WEED CONTROL IN CORN

*K. P. Buchholtz*

UNIVERSITY OF WISCONSIN

CORN cannot compete successfully with weeds without the use of control measures. There is probably no single factor subject to the farmer's control that will reduce yields more than weeds. If weeds are not controlled adequately they will utilize excessive amounts of light, moisture and soil nutrients. Under such conditions maximum yields will not be obtained. The weed seeds produced in heavily infested fields are certain to increase the weed problem later in other crops in the rotation.

**Quackgrass.** The main attempt to control this weed should be made before the corn is planted. Fall tillage the year prior to planting gives the best opportunity for quackgrass control. Use of a heavy duty spring toothed field cultivator brings the roots and rhizomes of this weed to the surface of the soil where they will dry out and be killed. Repeated tillage is required to bring all of the underground growth to the soil surface. Even one or two thorough cultivations during a dry fall will greatly reduce quackgrass infestations and simplify the weed control problem the next spring.

Excessive tillage, especially

during damp periods, will destroy soil structure. Satisfactory control of quackgrass without excessive tillage results from applying 20 pounds of TCA per acre in the early fall and following this treatment with one or two cultivations. Conditions in the spring are seldom dry enough to get satisfactory control of quackgrass from cultivations made at this time. Quackgrass is controlled more adequately by check-rowed planting and cross cultivation but this practice tends to increase erosion and does not permit use of the higher rates of planting.

**Annual Weeds.** One or two cultivations in the spring before planting encourage germination of weed seeds and allow them to be destroyed. The corn should be planted immediately after the last overall cultivation. All practices which promote rapid growth of young corn allow thorough cultivation sooner and enable the corn to compete with the weeds more successfully. In this regard a readily available supply of plant nutrients, seed treatment, adequate soil moisture and favorable planting depths need to be considered. After planting frequent use of a harrow or a rotary hoe is useful on many soil types for destroying weed seedlings before the corn emerges and until it is a few inches tall.

After corn growth has started prompt use of conventional tillage equipment will prevent annual weeds from developing and will aid in controlling quackgrass. Corn is a shallow rooted plant and care must be taken to avoid injury to the roots by cultivating too close or too deep. Use of duckfoot shovels is preferable to use of narrow shovels because they need not be set to cultivate as deeply. Throwing soil into the row is a fairly effective way of controlling weeds but deep tillage near the row during this operation will often do more harm than good to the corn. Damage from root pruning is more likely to occur on fields that are check planted. Unless weeds are very numerous tillage is probably not advisable after the corn is knee high.

**Use of foliage sprays.** When adequate weed control has not been obtained by mechanical means, 2, 4-D may be used as a supplement for the control of broad-leaved weeds. Best kills of the weeds and least possibility of injury to the corn occur from overall applications made before the corn reaches a height of 8 inches. If 2, 4-D must be applied later the use of drop nozzles is beneficial. To avoid or reduce injury to the corn applications should never exceed ½ pound of 2, 4-D acid equivalent per acre. When drop nozzles are

used, adjust applications to the area actually covered. The corn plants are most sensitive to 2, 4-D during, and immediately after, warm humid periods following rainy weather.

**Soil treatments.** Under favorable conditions pre-emergence applications of chemicals to the soil will eliminate the need for the first, and sometimes the first two, cultivations. An application of 2 lbs. of 2, 4-D per acre at, or within a few days of, planting is suggested for all but the sandy soil areas. An application of dinitro at the rate of 8 lbs. per acre just as the corn is emerging gives good control of annual weeds that have come up and controls weed growth for about a month. Dinitro is usually applied as a band directly over the row to reduce costs for the chemical. This gives good weed control in the row and delays the need for cultivation between the rows. All soil applications fail to give satisfactory control of perennial weeds. They will not give satisfactory weed control when applied to dry soils during extended periods of dry weather.

# CONTROL OF CORN INSECTS

*J. W. Apple*

**"One for the maggot**
**One for the crow**
**One for the cutworm**
**And one to grow."**

This early American verse denotes the hazards associated with the growing of corn by our early forefathers. Fortunately, such stand losses are experienced very rarely by the present day corn producer. Instead of severe stand reductions shortly after planting, we must now contend with a vast multitude of pests throughout the growing season and on the stored grain right up to the time of consumption.

**Insects Attacking Germinating Seed**

1. Wireworms — Copper-Colored worms which reside in soil several years.

2. Seed-corn maggots — White maggots which develop from eggs laid immediately after planting. Most severe when germinating conditions are poor.

3. Seed-corn beetles — Small brown beetles which fly into a field shortly after planting.

**Control** — Use one of following seed treatments: 1 ounce of lindane per bushel of seed, or 2 ounces of dieldrin per bushel of seed.

**Insects Attacking Young Plants**

**Group A** — Destructive form remains underground.

1. Wireworms — Drill into base of plant and feed on roots.

2. White grubs — Root-feeding grub-worms which follow the breaking of sod-land.

3. Corn rootworms — Small white worms which cut roots from plants thus making plants susceptible to lodging. Become serious if same ground is cropped with corn for three or more successive years.

4. Subterranean cutworms — Black cutworm — Serious in fields that drain poorly.

Glassy cutworm—White worm which resembles true white grub in appearance and in that they are a pest the year after sod-land is broken for corn.

**Control** — Broadcast powdered or granular dust or spray before plowing or final discing: 2 pounds of aldrin or heptachlor per acre or, 4 pounds of chlordane per acre (Dosages should be increased by 50 per cent for muck soil).

Row application with starter fertilizer—use one-half of dosages suggested for broadcast treatment.

**Group B** — Worms which feed during night on corn stalks and foliage but return to soil surface during daylight hours.

1. Climbing cutworms — most serious in corn fields which follow hay or pasture.

2. Armyworm — Infrequent pest which migrates into corn from grassy areas or small grain fields.

**Control** — Make spray or dust application with one of following insecticides to plants and soil beneath plants: 2 pounds of toxaphene, DDT or chlordane per acre.

**Insects Attacking Plants During Midsummer**

**1. Grasshoppers** — May be serious in 1954 if spring months are dry. Watch for young nymphs in fence rows and hay fields.

Control — Use a spray or dust of one of the following insecticides: Dosages can be reduced by one-half if small grasshoppers are treated before migration into corn — ¼ pound of aldrin or heptachlor per acre, or 1 pound of chlordane per acre, or, 1½ pounds of toxaphene per acre.

**2. Corn borer** — Corn producers who plant early and fertilize heavily in an attempt to obtain high yields can expect more than their share of borers. Corn borer moths select the more vigorous fields for egg

laying and such fields are the ones most likely to show the greatest gain from an insecticidal treatment regardless of the general level of corn borer infestation.

**Control** — Apply a single application of 1½ pounds of DDT per acre as a spray or 2 pounds per acre as a dust during the period of July 10 to 15 if your infestation equals or exceeds the following: July 5th observation — 3 unhatched egg masses per 10 plants and corn is at least 50 inches in extended height. July 10th to 15th observation — 50 per cent of plants showing leaf feeding and corn is at least 55 inches in extended height.

* * *

**Spraying with 2,4-D temporarily raises the sugar content of some poisonous plants, making them more palatable to some animals.**

## Heating Farm Homes With Sunshine

Sunshine may someday help cut the farm family's winter fuel bills, according to information from the U. S. Department of Agriculture. Solar heating, though still in the experimental stage, may be best adapted to a location where there is a wide choice of exposures for the house, as on farms. In cities its use is limited because big buildings shade each other. Solar heating units to replace or supplement home furnaces are not yet available to the average home owner at reasonable cost, but are being tested in experimental houses.

About 90 percent of the heat of the sun can pass through window glass. With proper equipment this heat can be collected, stored and released as needed. Even without equipment, heat waves that come through windows are re-radiated by interior surfaces, then become too long to pass through glass so are held indoors. This is why a closed automobile becomes so hot inside when it stands in the sun, the specialists explain.

Many modern homes already use solar windows to help in winter heating. These big windows need to be placed according to the latitude and seasonal angles of the sun so that they can help warm the house in winter without causing discomfort in summer.

Unless carefully placed, solar windows or the popular "picture windows" may cause discomfort, inconvenience and even extra expense in furnishing. Such windows are not satisfactory if they must be constantly curtained for privacy or shuttered to keep out heat or if they are exposed to but not shielded for winter winds.

*University of Nebraska*

# Artificial Rain Makes Luxuriant Grass

**Two dairymen find it pays to irrigate hay and pasture . . .**

Condensed from American Agriculturist

*Hugh Cosline*

THERE are men who claim that irrigation of pastures and meadows is not a profitable investment, but two dairymen in Schoharie County, New York, who have tried it for a year think it pays.

Julius Westheimer points out that the profit can come in three ways. First, you get more milk; second, you feed less grain, and third, less labor is required. Mr. Westheimer in the past has put up grass silage to feed during the summer, but with irrigation he figures that he can grow pasture right through July and August and let the cows do their own harvesting. In the course of a year that alone is going to save a good many dollars.

Here briefly is Mr. Westheimer's setup. He can irrigate 100 acres by drawing water from Schoharie Creek. He irrigated ladino pasture six or seven times during the summer putting on from 1½ to 2 inches of water at a time which took 2½ hours. He has 10 acres of ladino and plans on putting in 20 acres more.

## MORE PLANT FOOD

It is obvious that if you are going to grow grass all summer the crop is going to need more fertilizer. On this farm 300 to 400 pounds of 0-20-20 is put on irrigated pastures twice a year, once in the spring and again in July just ahead of irrigation. The pasture is divided into plots of about 4 acres. The cows are left on each plot a week and then it takes 2 or 3 weeks for it to recover.

On Mr. Westheimer's farm I saw a field of alfalfa already cut three times and almost ready to cut again, or more likely pastured just before frost. Irrigation made the difference.

Reprinted by permission from the American Agriculturist, Ithaca, N. Y.

The irrigation equipment on this farm consists of a second-hand army fire pump and about a mile of aluminum pipe. One thousand feet of the pipe are used at a time and when it is necessary to move it, it takes two men about 25 minutes.

Dave Enders also takes water from Schoharie Creek. He has four locations where the pump can be used and he irrigates 110 acres of pasture and meadow.

Dave feels that irrigation on ladino is much more important than it is on alfalfa because ladino has a shallow root system. He would not invest in irrigation equipment if he were growing alfalfa as his sole legume, but he points out that ladino makes far better pasture and that's where adequate water pays off.

During July and August this past year, he pastured 70 head of cows on 40 acres.

On this farm the equipment consists of an 180 horsepower motor with a 6-inch suction that will deliver 11,000 to 12,000 gallons of water a minute. Water is delivered through 1600 feet of 6-inch pipe which puts on about 2 inches of water in 4 hours. It will cover 4 acres at a time and the pipe is moved twice a day which requires the time of three men for an hour except when fields are far apart.

LESS GRAIN

There is some evidence that many dairymen, when they improve hay and pasture, continue to feed about the same ratio of grain to milk. Dave said that he definitely feeds less grain on irrigated pasture. During the summer he fed a pound of grain to 6 pounds of milk and hopes to have a year-round average ratio of 1 to 5.

Some alfalfa is grown on this farm. All the land in the farmstead except low spots and some steep banks is tillable and all fields can be pastured. While Dave says that ladino is tops for pasture, he figures that he might switch to more alfalfa for hay.

One of the costs of irrigating which is easy to overlook is depreciation. But Dave apparently has considered this and is depreciating his investment rapidly. He figures that the cost of irrigating in 1953 was about $2,000 including depreciation, interest, gasoline and labor, and that the returns this past summer were at least $3,000. He hastens to add that the returns would be less in years of adequate rainfall.

While the investment in irrigation equipment is high, the investment in other machinery is rather low for a farm of this type. Some corn is used for silage; sometimes as much as 3,000 bushels are husked. But the corn picker is hired on a custom basis. He owns a field harvester, a hay baler, an ele-

vator (no blower), one tractor, and two trucks.

Like Mr. Westheimer, he fertilizes more liberally than before he irrigated, using about 14 tons of 0-20-20 at the rate of 500 to 600 pounds an acre each year. He also adds superphosphate to his manure but puts manure on corn and old meadows because he figures that it encourages grass too much when he puts it on ladino or alfalfa.

Until the practice has been tried longer I wouldn't feel like urging any dairyman to invest in equipment to irrigate his hay and pasture. A lot of dairymen are thinking about it, and some are trying it, so I am telling you what two Schoharie County dairymen told me.

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## What's A Woodlot Worth?

Is there any money—any annual income—in a woodlot?

"These figures show a $25 per acre income for 83 years—just taking the interest and leaving the capital," explained Lester E. Bell, Michigan extension forester. Here's the story of $20,600 cash income from 10 acres:

Back in 1871, Adam Bowman bought 40 acres in Van Buren county, Michigan. Clearing 30 acres and selling logs to a nearby sawmill for a possible top rate of $10 per 1,000 feet, he built a home and started to farm. But the story is about the 10 uncleared acres.

In 1922, Bowman's son-in-law, Bert Stanley, sold some 20-inch trees to Pierce Williams company for $2,100. Two years later he sold the farm for $4,000 to James Sarno who still owns it.

Sarno bought no coal for 29 years—using about 20 cords of wood a year from his woodlot of beech, basswood, elm, maple, sycamore, ash and whitewood. He also harvested some maple syrup.

In 1945, Sarno sold the 20-inch trees to the same company for $15,000 but reserved the tops and 33 basswoods. The tops provided 300 cords of wood to sell for $1,500. In 1950, the basswoods brought another $500. When a gas main was laid through the property, the damages payment was $875. He sold another 125 cords of stovewood for $625, found enough logs to build a double garage and give him some spare lumber, and still has 200 trees of more 200-inch diameter.

That's a total $20,600 from wood sold—not counting home use.

*Michigan State College*

# *Piatt County's Amazing Million Dollar Club*

**Farmers have banded together to double the income of their entire county . . .**

Condensed from National Fertilizer Review

"WE'VE set our goal. We've developed a firm program. We know where we're going. And we can measure our progress"! To emphasize the meaning of these words, Piatt county, Illinois, Farm Adviser A. C. Kamm smashed a fist on the desk before him.

"What's more," he continued, "this is an educational project based on the premise that if any real lasting good is to come to a community, it must come from the people within the community. That's what the Piatt County Million Dollar club is. A method of farm management conceived and carried out as a joint community effort that will benefit everyone in the community—the family, the church, the school, the businessman, the merchant and the banker, as well as the farmer."

"Stated simply, our goal is this: There are eight townships in Piatt county. With present average rotation practices, the average net income per acre in the county is about $22.00. Under the Million Dollar club program the profits are expected to increase to an average of $44.00 per acre. When we reach this $44.00 figure, the income will be up close to $6 million. But we're shooting even higher. What we're aiming for is an average increase of $1 million for each township. The proper use of adequate amounts of fertilizer is essential to our success," Kamm concluded.

Nearly three years ago, Piatt county's farm adviser became concerned with the progress which was being made agriculturally in the county. This is what he saw.

Piatt county, almost dead-center in one of the most fertile

Reprinted by permission from National Fertilizer Review, Washington, D. C.

farming regions in the United States, is blessed with soil rich, deep and fertile. Leading all other counties in Illinois, 88 percent of the land in Piatt county is classed as "highly productive." Flat and level as a barn floor, 85 percent of the land has less than a 2 percent slope! Climate is conducive to top yields.

Because of these great, natural advantages, crop yields were disappointing to Kamm. Farmers were averaging 56 bushels of corn per acre, soybeans 25 bushels, wheat 25 bushels, and oats 42 bushels. Here were average yields on 1,129 farms in a better-than-average county. At the same time, University of Illinois experiment fields throughout the state with soils much lower in native fertility than those found in Piatt county, were averaging 100 bushels of corn per acre. Better farming practices made the difference, reasoned the farm adviser.

At the same time, it was generally recognized that the average level of production in the county was not alarmingly low. But it seemed a horrible waste of time, money and effort for farmers to grow average yields when much more profitable yields were but a fertilizer spreader away.

Kamm got busy with paper and pencil. He found that the average Piatt county farmer was spending $46.50 per acre to produce crops worth $68.50 per acre. This left as profit a slim $22.00 per acre. Going a bit further with his calculations, he found that if farmers would produce crops worth $102.50 per acre, and keep costs at $58.90 per acre, then net profits would go booming along up to $44.00 per acre! Why not try to double the farm income of the entire county, he reasoned. It could be done with better and more intelligent balance in the plant nutrients applied to each field and farm.

Armed with this knowledge and vision Kamm went to work. He knew that an attempt to double the income of the farmers in his county would be a job too big for any one man or even a single group of men to handle. To succeed, each person in the community had to be encouraged to take part in the project. Teamwork would be esssential. Months of tough organizational groundwork were ahead.

Early in 1951 the University of Illinois extension program planning commenced with the approval of a preliminary report. In the ensuing months, additional studies and contacts were made on a planned township approach method of carrying out the county extension program. As Kamm and others criss-crossed the county listening here, talking there, The Plan took form as a shapeless lump

of clay assumes a recognizable form under the deft fingering of a master artist.

Finally, The Plan got a name.

"Why not," said C. W. Messner, a Piatt county agricultural worker, "call this project the 'Million Dollar club.' The potential increase in county agricultural income will total some six million dollars. This is almost one million dollars a township."

The name was adopted and a phase in the campaign was ended.

During April, 1952, every banker in the county was contacted concerning this project and its financial effect on his circle of customers.

"It was gratifying to have every banker—six of the eight townships have banks—recognize the importance of the undertaking," Kamm and Messner point out. "The support and cooperation of the bankers were considered vital to the organizing of the club and the successful operation of the program."

Each banker was asked to name a preliminary "leaders' group." These small units then were called together to discuss how their township could do its part in the program, and how membership in the Million Dollar club might be encouraged and developed. In the two townships without banks, agricultural leaders were selected to head the organizational phase of the project.

Suggestions from each township group were funnelled to a central body. Here the mass of ideas were catalogued, discussed, rejected or accepted. Soon, the club idea developed. Small at first but it grew speedily. Membership qualifications were adopted and membership cards were designed. Plans for future action were decided upon.

Up till now all that the folks in Piatt county had was a vision, a goal. The goal was to double the farm income of the county. Now they faced a difficult problem. How to go about doubling farm income?

Of course, everyone realized that crop yields per acre had to go up and unit cost of production had to be forced down. But there were almost as many opinions about how to do this as there were men interested in the project. What was needed now was a formalized plan—on paper—simple and easy to understand and one which could do the job.

One fine May morning last year, acting as spokesmen for the township groups back home, Kamm and Messner knocked on the doors of Dr. H. M. C. Case, head of the University of Illinois department of agricultural economics and M. B. Russell,

head of the agronomy department. Case and Russell listened while the two Piatt Countians talked. The club plan was based upon suggestions that:

"A critical review be made of the organized material compiled by the farm adviser as the foundation for the project.

"A means of stimulating desire on the part of the farmers to become members of the club.

"Determining what the qualifications should be for membership.

"Methods of assisting farmers to meet the qualifications necessary to become members.

"A request that a special committee be formed from members of the department of agricultural economics and the department of agronomy that might assist in developing a farm planning booklet to be used in connection with the Million Dollar club program. Both fertility and erosion control were to be given special emphasis."

The proposed plan and the club idea were heartily endorsed by Case and Russell. Assurance that not only the two departments, but also the entire college were wholeheartedly behind the project was given Kamm and Messner.

Material was assembled which might be used by farmers, landowners and others, in making their individual plans. The committee worked closely with Kamm and Messner, representing the Piatt county extension service.

On January 10, 1953, at a countywide get-together in the high school auditorium in the county seat, Monticello, the Million Dollar club became more than a vision. It was made a fact.

Each person in the audience received a booklet titled "Picking Your Million Dollar Farm Plan." In the pamphlet are suggested farm plans for establishing a balanced fertility program on every field in the farm. Intended strictly as a guide-post, but tailored for the needs of the Piatt County farmer, these plans can be adapted for use by farm operators and land owners almost anywhere in the nation.

The booklet offers six distinct plans for Piatt county farms showing:

1. The total value of grain production per acre.

2. The total cost, per acre, and the amount of this cost spent for maintenance fertilizer per acre.

3. The net return per acre.

4. An explanation of each plan, also advantages and limitations.

5. An example of how the plan can operate.

Fertilizer, its proper and adequate use, is the key to each plan. The first step, regardless of the plan followed, is the proper soil testing of every field. When the results of the soil test

are known, the easy-to-follow instructions presented in the chosen plan are observed by the farmer. Basically, each plan shows the kind, amount and place in the rotation to apply plant food. And, the booklet shows how build-up and maintenance fertilizer and plant food programs can be carried on profitably each year.

* * *

**Levels of feed consumption of pullets vary with breed, age, and rate of lay. One hundred leghorns at 50% laying production should eat 24 pounds of feed daily; if at 70% production their feed intake should be 26 pounds a day. The same number of heavier type birds such as New Hampshires need 32 pounds of feed for 50% production, conditions, and 34 pounds for 70% lay.**

* * *

The program now has been in operation for almost a year. This has been a "trial and error" period; a year of organization and promotion. Fully 10 percent of the farmers in the county have signed a membership application and are being guided by one of the six suggested plans. The concensus is that the Million Dollar club is basically sound and is working very well. Membership may more than double next year.

So far this year, one formal report has been made. On November 4, the members of the Bement township club met and this is their story: In just one year, club members raised their corn yields from an average of 54 bushels per acre to 79 bushels! Does club membership pay? Bement township farmers vote a loud, "yes." Million Dollar "clubbers" reported yields ranging from 57 to 104 bushels of corn per acre. The average was 79 bushels. In addition, average yields of 31 bushels of soybeans per acre, 39.3 bushels of wheat and 44.1 bushels of oats were recorded.

The Million Dollar club is an ambitious plan. It is unique in that it is fixing a stated financial goal to be achieved through organized community effort. The first year appears to have been successful. What lies ahead? No one knows for sure. One thing, though seems certain. As farm income creeps slowly ahead in Piatt county, more and more farmers throughout the country will hear about the Million Dollar club. They will quickly realize the importance of this program and institute one like it in their community.

# Field Brome in the Orchard

**Experimental trials indicate that field brome may be the answer to cover crop problems for the orchardist . . .**

Condensed from the Rural New Yorker

*John C. Cain and E. A. Carleton*

THE ill effects of continued clean cultivation on farm soil have long been recognized. The practice depletes soil fertility, destroys soil structure and frequently leads to severe soil erosion and water loss. The general farmer may meet this problem by terracing, strip crop farming and crop rotation systems. In apple orchards, sod culture with nitrogen fertilizer added, or partial cultivation, has proved to be satisfactory. However, the problem is less easily solved with such fruits as peaches and cherries which are not so tolerant of sod management systems in the orchard.

Because of the expense of annually reseeding fall cover crops and the uncertainty of getting a stand, as well as the urgency of other work in the orchard in late Summer, the common practice in peach and cherry orchards is simply to quit cultivating in July and depend on a volunteer cover crop which is frequently worthless weeds. Furthermore the soil is often bare, recently tilled and most vulnerable to severe erosion and water run-off during summer rains.

Experimental trials now under way at the Geneva, New York, Station with field brome (Bromus avensis) indicate that this new grass, when properly managed, may be the answer to some of the cover crop problems for the fruit grower.

This grass was introduced for trial from Sweden about 1939 and has been under test for several years by the Soil Conservation Service. Enough seed was procured in 1949 for field trials as a cover crop in experimental orchards and some of the techniques of its management have been worked out at the New York State Station.

Field brome, not to be con-

Reprinted by permission from the Rural New Yorker, New York City

fused with western brome grass, is a hardy winter annual. It is a prolific seed producer, tillers readily and recovers easily after disking during the growing season. It is vigorous in growth and has been found to smother other grasses and weeds readily. It is easily destroyed by preventing it from going to seed or by tilling the young seedlings. None of the seed carries over a second year in the soil. It resembles oats somewhat in having an open seed head and can be maintained indefinitely by annual self-reseeding. The seed heads usually mature in New York State in early August.

**How To Seed Field Brome**

For use as an orchard cover crop, field brome should be seeded on freshly fitted land about August 15 and not later than September 15 at the rate of eight to 10 pounds per acre. The seed should be firmly imbedded into the soil immediately with a cultipacker.

If the soil is moist, germination takes place in about a week and the seeding looks like a good stand of winter wheat by mid-October. It is usually advisable to use about 200 pounds per acre of a 10-10-10 fertilizer at seeding time to get the grass off to a good start. A light annual application of nitrogen may be used to advantage in subsequent years to insure a good cover before Winter. This fertilizer is not lost as it is quickly absorbed by the grass and is returned to the soil by spring disking.

In the Spring when the new growth of grass is six to 10 inches high, or as soon as the soil is dry enough for cultivation, the grass stand should be reduced about 90 per cent by disking. This is usually done between May 1 and May 15. If three or four plants per square foot are left after disking, these produce adequate seed for reseeding and prevent severe competition with the orchard tree for nutrients and water. Together with the chopped plant residue in the surface soil, these plants provide adequate cover to prevent soil erosion and water loss by runoff during summer rains.

If the field brome comes back too thick, it may require a second disking in three or four weeks, but the operator soon learns the degree of disking necessary to leave the required reseeding stand and still reduce water loss by grass growth.

The time to disk down the green cover can be regulated somewhat by the rainfall. If the spring season is very wet, the grass may be permitted to grow longer, using the excess water to grow more crop residue. The main objective in cover crop management in the orchard is

to retain all water that falls on the land during the growing season, using the excess over tree requirements to grow crop residue. These residues in turn improve soil structure, increase the soil's capacity to hold water and nutrients and help prevent erosion.

The growth of the grass cover must be suppressed during the spring months to reduce its competition with the tree for available nitrogen, and encouraged to make maximum growth in late Summer and Fall. This helps harden off the trees for the Winter as well as provide a good soil cover.

**Reseeding From Original Stand**

When the seed heads are dry, they shatter off and, if the surface soil is moist, they germinate immediately. The cover should be lightly disked again at this time, usually about the middle of August, to chop down the old crop residue and insure the new seeding. A light application of nitrogen fertilizer at this time insures vigorous growth and a good ground cover before Winter.

Field brome, because of its ease of management, permits a heavy stand to be grown in the Fall, when the orchard tree is inactive, using water and nutrients that may otherwise be lost by leeching and erosion. This winter cover prevents soil erosion during early spring thaws and insures a maximum storage of water in the soil with which to start the growing season.

The ability of field brome to recover after disking permits spring disking to aid in the decomposition of organic residues and to reduce the competition between orchard tree and grass at a time when the tree needs all the nutrients and water the soil can deliver. The few plants surviving the spring disking provide adequate seed for reseeding a solid grass cover.

It can be readily seen that field brome presents new possibilities in efficient and practical orchard management, as related to cover crops. Many farmers and orchardists in past years have carefully prepared the orchard soil, planted the trees, and then had the heart-sickening experience of witnessing a small yielding or even a fruitless orchard. This was due largely to erosion and the consequent loss of soil nutrients. Such losses can now be combatted and practically overcome by the use of proper cover crops and suitable fertilizers. Most recent and prominent among the cover crops is field brome.

(Ed. — Growers interested in trying this field brome grass may be able to procure trial lots of seed by application to their local Soil Conservation Service offices.)

# *Controlling Mormon Crickets*

**A new chemical replaces older methods in controlling this scourge of the West. . . .**

Condensed from Hereford Journal

SINCE pioneer days the Mormon cricket, a large wingless grasshopper, has struck fear in the hearts of western farmers and ranchers. In 1848, the famous infestation of these pests in the Great Salt Lake basin was terminated spectacularly by large flocks of gulls. Grateful settlers erected a monument in commemoration of this event.

These insects, which are not true crickets but are related to the katydids and long-horned grasshoppers, have somewhat the appearance and habits of the field cricket. Naturally inhabiting high, rugged terrain in mountainous country, Mormon crickets are feared in cultivated areas because of the sudden devasting migrations and the severity and extent of their attacks.

Migrating bands of pests will attack all crops in outlying dry farm areas, but the greatest financial losses occur in small-grain crops, principally wheat. Alfalfa, sweetclover and truck crops, especially young sugar-beet plants, are among their preferred foods. Unless small bands are controlled immediately when found, widespread outbreaks may result. In early days, settlers erected wood, metal and trench barriers in their efforts to halt the migrations of Mormon crickets.

In 1953, Mormon crickets were controlled on nearly 500,000 acres in five western states. This also provided protection for several million adjacent acres. Control efforts were carried out cooperatively by the USDA's bureau of entomology and plant quarantine, federal land-managing agencies and state, county and local agencies. The poisoned bait, distributed in Nevada, California, Utah, Idaho and Colorado halted the biggest outbreak of these pests that has occurred since 1940.

Surveys enabled the cooperating control agencies to bait the crickets before they migrated from their hatching grounds. Aldrin in steam-rolled wheat,

Reprinted by permission from Hereford Journal, Kansas City, Missouri

applied with aircraft and modern ground equipment achieved excellent Mormon cricket kills within a few hours after treatment.

* * *

**U. S. farmers bought 1,340,000 tons of commercial fertilizers in 1952. That's a lot of fertilizer, but no other investment gives better returns than fertilizer when it is properly applied.**

* * *

The Utah Farmer recently reported on results of a survey made of the baited areas in the Tooele-Juab region. Large numbers of dead Mormon crickets and remnants of bait were found. Not one single living Mormon cricket was found by any member of the survey party of government entomologists, who walked all day through areas formerly teeming with the partly-grown pests.

Approximately 58,000 acres of range and pasture land were baited by aircraft in this area. Just two ounces of aldrin, 100 pounds of steam-rolled wheat and ½ gallon of diesel oil were needed to treat each 20 acres. Only five pounds of bait per acre were used to provide this efficient Mormon cricket control.

## Freshen Cow In Fall, Net Another $20

How much more profit can you expect when your cows freshen during the fall months instead of the spring?

Extension Dairyman D. L. Murray of Michigan State College reports that dairy herd improvement records show this: For cows freshening during September, October and November, the income over feed cost averaged $232 per cow. The average for cows freshening during March, April and May was $212.

Murray says the figures showed a slightly higher feed cost for cows freshening in the fall but the increases in production and the higher price for milk and butterfat still gave about $20 more per cow in favor of fall freshening.

Cows freshening during the fall, reminds Murray, make for a more even distribution of labor throughout the year. There's more time to spend with the dairy herd in late fall, winter and early spring. And calves born in the fall usually make good growth since they are in the barn to receive better care. When summer comes they will be the right size and age to make good use of pasture.

Fall freshening, adds Murray, is of particular importance to those dairymen selling whole milk.

*Michigan Extension*

# Weed Killer Equipment and How to Use It

**It is important to know the most efficient way to apply chemicals for weed control. . . .**

Condensed from New Jersey Farm and Garden

*Prof. E. M. Rahn*

UNIVERSITY OF DELAWARE

YOU can wipe out a week's work and 10 acres of crops in about an hour of spraying if you aren't careful. Or you might spend $50 on chemical weed killers, then get no reaction. It all depends on how you apply them.

Here's a guide on what equipment to use and how those chemicals should be applied. It is based on research and experience in Delaware.

There are two ways to apply chemical weed killers—by over-all application, or band application, the latter being favored by most growers because of lower cost and less hauling of water. Spraying over-all means carting 30-50 gallons of water over each acre.

Spray a 12-inch band over rows spaced three feet apart and the chemical and water required will be only one-third as much as if the whole area were treated.

The best way to get bands exactly over the rows is to mount a nozzle in back of each planter wheel. With the pump and spray tank mounted on the tractor, seeding and application of a weed killer can be done in one operation. Separate the jobs and you'll find it tough to place the bands properly, especially if you treat more rows at one time than there are planter wheels on the planter.

From 50 to 75 pounds pressure is sufficient for all spraying. Higher pressure may injure small pumps. Probably more important than pressure is tractor speed.

For spraying over-all, Monarch No. 59 or Teejet No. 8006 are good nozzle tips. For spraying a 10-15-inch band over the row, Monarch No. 39 or Tee-

Reprinted by permission from New Jersey Farm and Garden, Sea Isle City, N. J.

jet No. 8002-4 nozzles are being used successfully. Whenever wettable powders like CMU or Alanap-1 are used, screens should be taken out of the nozzles; left in, they will quickly clog up.

Most tractor-mounted sprayers are equipped with gear-type pumps for applying 5 to 20 gallons per acre. These are sufficient where the band method is used, but where spraying over-all, a higher capacity pump is needed.

When wettable powders are used, gear pumps tend to wear out faster due to the sandpaper effect of these suspended materials. Best pumps to use with low concentrations of wettable powders, according to Prof. W. W. Gunkle, of Cornell University, are diaphragm and nylon Roller Vane pumps. He also points out that CMU is not as abrasive as some wettable powders.

Whether you use wettable powders such as CMU or Alanap-1 or materials like Geigy PCP No. 10 or Dow General that form oil-water emulsion, agitation is a MUST to get the material thoroughly dispersed and to keep it that way. Where a soluble material (Premerge, Sinox-PE, Santobrite) is used, agitation is not needed once the material is thoroughly dissolved and mixed.

Most tractor-mounted weed sprayers have no agitation other than that caused by the overflow. Although mechanical agitation is best, fairly good agitation can be caused by the overflow if it is of sufficient volume. Most pumps to be mounted on the power take-off of tractors do not have enough capacity to provide sufficient overflow when 30 to 50 gallons of spray per acre is applied. However, there are at least two pumps with a high capacity preferred for chemical weed control in vegetable crops.

In the bottom of the tank the overflow should flow through three jets pointing in opposite directions. This will aid in preventing wettable powders and oil-water emulsions from separating out.

If you are applying wettable powders or oil-water emulsions and stop for awhile to make repairs, make sure your material has not settled to the tank bottom. If it has, by some means thoroughly mix it up again.

Spray booms of smaller diameters cause less trouble with regard to nozzle clogging than booms of large diameter where the flow of spray is not sufficiently rapid to prevent settling of wettable powders in the boom itself.

# ARE YOU FEEDING 'HARDWARE' TO YOUR LIVESTOCK!

**Many valuable animals can be saved if the trouble is detected in time. . . .**

Condensed from Utah Farmer

*Dave Mann*

ARE your cows getting baling wire, barbed wire, broken fork tines, screws and nails with their hay?

If they are not, you're just lucky!

Many a valuable cow has died from eating, farmyard hardware, the common phrase for short lengths of baling wire, nails and similar pieces of metal.

"Where do they get it and how can a cow be so dumb as to eat baling wire?" you ask. Very simple. You unknowingly or accidentally, leave short lengths of baling wire and even barbed wire in your hay fields. You mow the hay and cut the wire into pieces. The side delivery rake windrows the wire in with the hay, and if you bale the hay, the baler cuts the wire into shorter pieces and bales it with the hay. If you field chop your hay, the answer is the same—the chopper cuts it into short lengths and it goes to the stack.

When it reaches the manger, the cow takes a mouthful of dry hay, either chopped or baled and gobbles it down. She can't tell the difference between a two-inch length of baling wire and a two-inch stem of alfalfa stalk. Later, her hay comes up for additional chewing, but the hardware has gone to the bottom of the cow's stomach, soon to start its deadly work.

And that's not the only way. Perhaps the dairyman goes into his barn to make repairs on mangers or haylofts, meanwhile innocently dropping nails into the hay. A cow can't differentiate between a three-inch length of steel fork tine and a stiff stem of alfalfa hay, and neither will she discern other small bits of metal mixed by accident in with her hay.

BALED hay and chopped hay are thus the major carriers of hardware. While silage may carry bits of metal, it is much rarer for an animal to eat down short lengths of baling wire or

Reprinted by permission from the Utah Farmer, Logan, Utah

nails mixed in with silage than with dry hay, probably for two reasons—in wet silage the metal gravitates to the bottom of the manger and the cow leaves it; or else she is able to distinguish the stiff wire in soft feed and she leaves it.

One Utah dairyman, who feeds large quantities of grass silage, says that cows won't eat hardware mixed with silage, for he has occasionally found odds and ends of metal in the bottom of the silage manger where the cows have left them after eating the silage.

The difficulty with this hardware hazard to cows is that it is increasing because the use of chopped dry hay and baled alfalfa is on the increase.

Just how serious this business of eating hardware is becoming can be seen in the three-year record of hardware operations performed by Dr. E. H. Gibson, well known veterinarian, who operates an animal hospital in Logan, Utah.

In the last three years up to and including November 18, Dr. Gibson has operated on 289 head of cattle, mostly dairy cows, for the removal of hardware. From one animal's stomach, he lifted 56 pieces of metal —wire, staples, nails, screws, a knife out of a hay chopper and part of a steel fork tine.

Of the 289 victims, 45 died—due to extensive infection at the site of penetration by the wire. Many of their owners had let them go until it was too late and the metal had formed large abscesses.

Dr. Gibson, a former Utah extension service county agent, draws most of his business from a radius of 60 miles. Most of it involves dairy cows.

I WAS on hand November 3, when a cow was brought to Dr. Gibson's hospital for a hardware operation and watched the proceedings.

The owner had brought the cow 20 miles in a trailer. She was a valuable Holstein and when checked by the veterinarian, had only a slight fever. However, she was grunting from pain and suffering from impaction.

After checking her heart and making other diagnostic tests, Dr. Gibson diagnosed her touble as traumatic gastritis, or so-called "hardware disease."

She was then placed in a special stanchion, but not tied nor fastened except with her halter rope. The flank on the left side was clipped, the side washed and sterilized and four of the major nerves in her back blocked off, which the doctor termed a "para lumbar nerve block."

After waiting 25 minutes for the drug to take effect, Dr. Gibson made an eight-inch incision through the hide and abdominal muscles, revealing the

stomach wall. He then tacked, or sewed the cut sides of the skin to inside stomach wall after which he cut through the stomach wall and proceeded to remove two large buckets of feed from the animal's stomach. Meanwhile the cow was standing normally and showed no indication of any pain.

Next the doctor reached to the very bottom of the second stomach by placing his entire arm to the shoulder inside the cow's abdomen. Within a matter of a few minutes of searching with his right hand he located the offending wire—a two-inch piece of sharp baling wire—and removed it. Finding no other metal with further searching, he sewed up the incisions and the animal, which to this point had showed no signs of pain, was loaded back in the trailer and returned home.

During the entire operation, she had lost no more than a half tea cup of blood, and she evidently had experienced no pain.

But the end result was that her life was saved. For if she had been allowed to remain at home, without an operation, the wire would likely have worked its way through the wall of her stomach and formed an abscess which probably would have proved fatal.

DR. GIBSON said that occasionally he operates on a cow and finds the wire has penetrated clear through the wall of the stomach and in an abscess outside the stomach wall. When this condition is encountered, he dares not break the abscess for fear of generalized peritonitis.

He went on to explain that the second stomach has walls similar to a honeycomb and that owing to the rhythmatic contractions of the stomach, the sharp wire is caught in the folds, easily enters the wall and begins to travel through the stomach wall.

There are some cases where the wire stops and an abscess forms which nature walls off with tough tissue. Later the abscess is absorbed and the wire remains caught in the pocket of tough fibrous tissue. Yet even more times, the abscess continues to enlarge and finally kills the animal.

The secret of saving an animal that has eaten hardware is to get her to the veterinarian when she first shows symptoms of distress and have the offending metal removed before it forms an abscess. To wait increases the hazards involved and may result in losing the animal. The common symptoms of hardware disease are suddenly going off feed, down in milk, stilted gait, distress and pain on moving, a variable fev-

er and some impaction of the bowels.

* * *

**The United States Department of Agriculture invoked an embargo on imports of dried whole milk, dried cream and dried buttermilk on April 1.**

* * *

While it is unfortunate for the dairyman for any of his cows to eat hardware and have to undergo an operation, the recovered animals have considerably more value than if they were salvaged for beef when they first go off feed. Even in the early cases, many so-called "wired cows" are condemned at the slaughter houses.

Dr. Gibson points out that after a successful hardware operation, the cow can either be left in the milking herd, or if A grade, she is, at present, worth from $200 to $275 in the California cow market—considerably more if she is a good purebred.

To let the animal go without an operation, however, may mean the loss of the cow and no dairyman can afford to lose a good dairy cow.

## Ketosis Hits Dairy Cattle Oftener Now

Ketosis, a disease that causes severe losses in milk production, is more likely to occur in winter or early spring than any other time, warns Dr. James Williams, Michigan State College.

"We don't know why exactly," Dr. Williams says, "but fluctuations in temperature and humidity may be part of the cause. We advise dairymen to provide plenty of ventilation in their barns as a precautionary measure."

When a cow contracts ketosis, she goes off feed suddenly, and there is a sharp drop in milk production. She sometimes becomes violently nervous and she may stagger as if intoxicated, or she may walk stiffly at the beginning of the disease. Ketosis most often occurs in high-producing cows shortly after calving.

The best preventive, Dr. Williams suggests, is to see that cows, especially those in high milk production, get plenty of good quality grain and hay or silage. Sometimes a ketosis-hit cow will respond to an increased amount of carbohydrates—sugar or molasses—in the ration.

The best idea, Dr. Williams points out, is to call the veterinarian immediately when ketosis in suspected. A prompt diagnosis is desirable before prescribing a cure, as the malady can be confused with many other diseases.

*Michigan State College*

# Large Cow Stalls and Electric Cow Trainers

**What 75 Wisconsin dairymen with new or remodeled barns have to say....**

Condensed from Special Bulletin 3

*L. A. Brooks and F. W. Duffee*

UNIVERSITY OF WISCONSIN

IN the spring of 1953 a survey was made of Wisconsin farmers who had recently remodeled their dairy barns and put in large cow stalls. The purpose of this survey was to obtain the experience of farmers using cow stalls that are longer and wider than are ordinarily used.

Reports were mailed back by 89 farmers, of whom 74 were using large stanchion stalls and 14 were using large tie stalls. The farmers with large stanchion stalls have been using them for an average of two years, five months, and those with large tie stalls have been using them for an average of two years, two months.

## What 89 Farmers Reported About Large Stalls

**How Much Stall Size Was Increased.** Stanchion stalls were increased in length from an average of 4' 9" to 5' 6"; an increase of 9". The width was increased from an average of 3' 4" to 4' 0"; an increase of 8".

The tie stalls average 5' 9" long and 4' 3" wide. Before remodeling, they averaged 4' 9" long and 3' 5" wide. The tie stalls are 12" longer and 10" wider than the former stalls.

Twenty-one per cent said they would make their stalls still longer and 24 per cent would make them still wider if remodeling again. Only two farmers (2¼%) out of the 89 said they would prefer smaller stalls, but their present stalls are larger than is recommended for their size of cows.

**Farmers Well Pleased with Larger Stalls.** All of the users are satisfied with their large cow stalls, and some stated that it was the best investment they have ever made on their farm. Practically all the farmers had remodeled old barns and there-

Reprinted from Special Bulletin 3, Agricultural Experiment Station, Madison, Wisconsin

fore it was necessary to compromise on some of the dimensions. Many with narrow barns would increase the length of stall if they had a wider barn or were building a new barn.

**Electric Cow Trainers Keep Cows Cleaner.** Electric cow trainers were operating satisfactorily for all but two of the 68 farmers using them, and these two, who had homemade units, stated their trainers were operating "fair." None of the farmers said they did not like the trainers, and many were very enthusiastic about their performance. They felt it was definitely necessary to use cow trainers on long stalls in order to keep the cows clean. Only 3 farmers out of the 89 with large stalls reported dirtier cows, and none of these 3 were using trainers. Eighty-four per cent of the farmers said they had cleaner cows and most of them were using electric cow trainers.

**Injuries Greatly Reduced.** There was a great reduction in cow injuries on the large stalls in comparison to the smaller stalls used before remodeling. Ninety-two per cent reported a reduction in teat and udder injuries and 89% a reduction in leg injuries since using large stalls.

**Large Stalls May Save A Little Bedding.** Fifty per cent of the farmers reported using the same amount of bedding and 41% used less bedding than before. Cows on long stalls push less bedding into the gutter, but because of the larger stall area to bed it appears there probably isn't much saving in the bedding requirements.

**Large Gutters Are Used.** There were 68% of the farms with 16 inch wide gutters and only 6% had gutters narrower than 16 inches. Twenty-six per cent had gutters wider than 16 inches. Most of the gutters varied from 8 to 12 inches deep on the stall side.

**Wide Feed Alleys Make Feeding Easier.** Most of the farmers had feed alleys wide enough for use of feed carts. The average width of feed alleys was 4' 4". There were 62% of the farmers using grain carts and 81% using silage carts.

**Narrower Service Alley Used with Barn Cleaners.** Mechanical barn cleaners were used by 50 of the 89 farmers reporting. Many commented upon the great labor saving resulting from using a barn cleaner. None reported unfavorably regarding barn cleaners. The average width of the service alley in stanchion stall barns is 6' 8" with a barn cleaner and 7' 5" without a cleaner, a difference of 9 inches. The average width of the service alley in the tie stall barns is 7' 1" with a barn cleaner and 8' 6" without a cleaner, a difference of 1' 5". A service alley for

driving a spreader through should be 7½' to 8' wide. Where long stalls and a barn cleaner are used, a service alley 6' 0" is quite satisfactory and may be reduced to 5' in a very narrow barn.

**What Farmers Say**

"We did not use cow trainers for about six weeks. In that time we used a large amount of bedding and could not keep cows cleans. When we installed cow trainers cows were clean and dry all the time."

**"I think the wide, long stalls are tops. It's a pleasure to milk and work in the present barn."**

"I'm so completely satisfied I wouldn't make any changes . . . I used to spend at least $150 to $200 a year for garget and smashed teats. One cow's teat cost me $19.25. This is what put me wise. She was high cow in barn at that time. I still got her but that was too much, that is what started the ball a rolling and, boy, that was the best investment I ever made . . . I'm 100% for long cow stalls and cow trainers and deep wide gutters."

"Our cows are not as large as some Holsteins so our stall size (5' 7" long and 4' 2" wide) is ample. Even two year olds however keep clean in full size stalls (with trainers)."

"I prefer long stalls because when the cow lays down the udder is well on the stalls and the trainer trains the cow to back up and that helps to keep them clean."

**"In this type of barn I have had no teat injuries . . . Trainers are a must."**

"We have 2' wide sweep in mangers which we like exceptionally well for feeding silage, hay and grain. We clean the gutters once a day, and with that depth on the gutters (10" stall side, 8" alley side) there is no running over. That barn cleaner is a real back saver.

"The cows have been more comfortable and as a result the production is better. We used to have many stand in the gutter. This has been almost entirely eliminated."

"I like the barn cleaner very much and the cow trainers also. If I had known that the cow trainers would have worked that good, I would have made my stalls longer."

"Before we remodeled we used to lose a few (always the best ones) cows every winter by udder injury. So far we didn't have a one with a sore teat. I think if we would have remodeled years ago we would be money ahead by far. Also the cow trainers are very satisfactory, the best investment I have ever made. Cows stay cleaner with a whole lot less bedding."

**"Small cows can be kept clean in large tie stalls with a trainer, so small stalls are not needed for small cows."**

# VETERINARIAN'S NOTEBOOK NO. 4

## FOOT-AND-MOUTH DISEASE

**In England, the threat is always there. Here is an English veterinarian's advice to stockmen. . . .**

Condensed from Farmer and Stock-Breeder

**"WHY the — — don't they do something; vaccinate the cows or something. It's a funny thing that all they can do is slaughter after all these years." Thus spoke a farmer friend of mine after hearing a British announcement about further outbreaks of foot-and-mouth disease. You know you've got to consider the facts about it first of all. There may be a lot that the veterinary profession don't know about this trouble but there is a lot they do.**

Foot-and-mouth disease is what is known as a virus disease —a virus being a very small form of organism (less than 1/25,000,000 of an inch in length). It exists in three distinct forms. Types O, A and C. Recovery from attack by one form gives no protection against attack by another and it is highly contagious.

In Britain, up until this last outbreak, the cases have been mostly due to type O, but the last was found to be due to a highly virulent strain of type A and as you can expect when you get the introduction of a fresh strain it "goes to work with a will."

Under certain conditions this virus has remarkable powers of survival and the conditions it likes best are a dry atmosphere and low temperature. It has been found to survive for five months in dry, cold weather.

### Alive for Weeks

In carcasses slaughtered for food and kept at freezing temperature, the virus remains alive for several weeks, so you can see the possible sources of infection to your stock.

Where does the infection come from in the first place? Well, unfortunately England is

Reprinted by permission from Farmer and Stock-Breeder, London, England

only separated by a narrow stretch of water from the continent of Europe where they have different ideas about the disease than we have. Whereas due to a slaughter policy we only have "outbreaks" here, on the continent where they practice vaccination, the disease is permanently present and sometimes becomes almost out of hand.

For example in the last outbreak in Germany 80,000 animals had to be destroyed. The virus comes to England through the agency of migrating birds, straw and hay used for packing purposes, and imported foreign meat carcasses. Between 1943 and 1945 for example, 85 per cent of the outbreaks started in pigs and in a large majority of these cases it was found that the pigs were fed on swill containing infected foreign meat waste.

**Birds, Boots and Tires**

Once in this country, it is spread by any means possible from farm to farm: Rabbits, hedgehogs, birds, clothing, boots, brushes, motor tires, almost everything you can think of.

What animals are likely to get it? Cattle, pigs, sheep and goats are all likely to get it and infection is usually through the mouth. Horses are not susceptible.

What symptom have you got to look out for? In cattle the common symptoms are smacking of the lips and slobbering and tenderness of the feet. The cow sways from one hind foot to the other. I don't advise you to go messing about looking in the mouth and then in another cow's mouth.

If the disease is in the district and you find one of your cows slobbering and paddling with its feet then report it at once as a suspicious case. Actually little blisters form in the mouth and between the claws of the feet, bursting and leaving raw places. They will be found on the teats too.

In pigs, lameness is the chief symptom and the blisters and raw places are mainly around the top of the horn of the foot, in the heels and in the space between the claws and also in the mouth and on the snout and udder. In sheep and goats it is the feet which are commonly affected.

What can you do if you suspect the disease? There is only one thing to do and that is to report the case at once to the nearest veterinary. Don't go and ring your neighbour up and ask him to come and have a look "to make sure"— it isn't fair and he'd be a bigger fool than you if he came.

Keep your cows in, shut your gates and if any lorries have visited your premises, tell the owners of them right away.

You can always ring up and say "false alarm" if it isn't foot-and-mouth, but if you let the milk lorry go on its rounds without warning, then you may be the cause of spreading the disease.

As soon as the disease is suspected, then the veterinarians go into action. Your cows will be examined, and if the case is confirmed unfortunately all your stock will be slaughtered.

You will be given full instructions about disinfection of premises and depending on the decision of the Ministry, you will be allowed to re-stock after some six weeks have passed. In the meantime a restriction of movement order will have been imposed. Don't forget that if you live within that area covered by the restrictions, even if your herd is not infected, you have got to get a license from the police to move any animal from your farm.

What can you do to prevent it? The best bit of advice I can give you in preventing an attack is to "mind your own business." Don't go probing about looking at other people's animals.

Put down straw soaked in disinfectant in all your gateways, and foot-baths of disinfectant. Don't allow any lorries or cars on your premises. Take the milk up to the gate and let the lorry pick it up from there.

Don't go to markets or sales, and remember you can take the infection home on your clothes after talking to old George in the "local" if old George's cows have got it. Just keep yourself to yourself for a week or two. Better to be safe than sorry.

Boil all your pig swill for an hour at least and remember that one of the best disinfectants against the virus is 4 per cent washing soda (½ lb. of washing soda in a gallon of water).

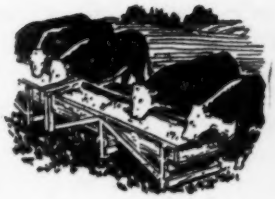
## Certified Seed Is Cheap Crop Insurance . . .

Certified seed may cost slightly more, but the added expense assures purity, higher germination and better yields at harvest. Seed of questionable purity and germination may not be cheap at any price, says L. C. Coffey, Texas extension agronomist.

Coffey points out that seed labeled "certified" is the best seed available of a particular variety. Seed in this category comes from fields that have been inspected during the growing season, properly handled upon harvest, cleaned, tested for purity and germination and properly stored. All this, he adds, is insurance for the farmer.

*Texas A & M College*

# Fortified Supplements Help Poor Roughages Fatten Beef



**Experiments prove the value of vitamins and minerals when fed with low-grade roughages. . . .**

Condensed from Missouri Ruralist

BEEF CATTLE feeders have shown considerable interest in low-quality roughages in recent years. These low-quality feeds include such roughages as old, over-ripe or weathered hay, grass hays, corncobs, straw, cotton hulls, stovers or poor quality silage.

The trick in feeding materials such as these is a top-quality protein supplement, fortified with vitamins and minerals.

Cattle-fattening experiments recently conducted at Purina Research Farm, near Gray Summit, Missouri, gives practical evidence that a properly fortified supplement can make poor grade roughages quite effective for fattening beef cattle.

The Purina test involved 3 lots of 10 2-year-old steers. Initial average weight was as nearly equal as possible.

The 10 steers in Lot 1 were fed shelled corn, good mixed alfalfa and timothy hay, and a good supplement. Rations represented the kind all cattle feeders would like to feed—high quality hay with grain and supplement.

Steers in Lot 2 got the same diet, with the important exception that instead of high-quality hay they got a poor roughage. Animals were fed ground ear corn with same supplement fed Lot 1. No hay was fed, cobs in ground ear corn being the only roughage. Rations fed here represented the feeding program many cattlemen have been forced to follow in the past when good roughage was not available.

The feeding program in Lot 3 represented what now may be done when poor roughage is being fed. These steers got ground ear corn, supplement, and no

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hay, as did those in Lot 2. But supplement fed in Lot 3 was fortified with extra trace minerals, alfalfa meal and a high level of vitamin A. Performance of steers in Lot 1 and 3 were remarkably alike. Average daily gain of steers in Lot 1 (where ideal rations of grain, good supplement and good hay were fed) was 2.55 pounds. Steers in Lot 3, on poor roughage but stimulated with the fortified supplement, gained 2.53 pounds per day. Gains in Lot 2, where poor roughage was fed with non-fortified supplement, were only 1.65 pounds per day.

Steers in Lots 1 and 3 finished out equally well and sold at $26.25 per hundred. Steers in Lot 2 did not finish as well and brought a selling price of $24 per hundred. Return per steer above feed cost in Lot 1 was $53.99; in Lot 2, $6.69, and in Lot 3, $52.56.

Here is solid evidence that poor-quality roughage may be most efficiently utilized by the steer when fed with a properly fortified supplement.

**HERE IS THE FEEDING TABLE OF THE 3 LOTS: (TABLE A.)**

| | Lot 1 Good Roughage | Lot 2 Poor Roughage | Lot 3 Poor Roughage |
|---|---|---|---|
| No. steers | 10 | 10 | 10 |
| Initial weight per steer | 861.3 | 868.6 | 865.0 |
| Final steer weight (149 days) | 1241.7 | 1113.9 | 1241.5 |
| Avg. steer gain | 380.4 | 245.3 | 376.5 |
| Avg. daily gain | 2.55 | 1.65 | 2.53 |
| Lbs. feed per 100 lbs. gain | | | |
| Supplement | 76.9 | 107.9 | 84.6 |
| Shelled corn | 686.3 | | |
| Ground ear corn | | 966.7 | 765.6 |
| Mixed hay (alfalfa-timothy) | 176.1 | | |
| Selling price per cwt. | $26.25 | $24.00 | $26.25 |

Here is a table translating Table A into dollars and cents figures. Corn is figured at $1.45 per bushel; supplement at $85 per ton; fortified supplement at $90 per ton and mixed hay at $20 per ton.

| | Lot 1 Good Roughage | Lot 2 Poor Roughage | Lot 3 Poor Roughage |
|---|---|---|---|
| Selling price per cwt. | $ 26.25 | $ 24.00 | $ 26.25 |
| Sale value per steer | 326.00 | 267.50 | 326.00 |
| Cost per 100 lbs. gain | 22.85 | 24.88 | 19.89 |
| Pork return per 100 lb. beef gain* | 3.42 | | |
| Net cost per 100 lbs. gain | 19.43 | 24.88 | 19.89 |
| Total cost of steer gain | 73.91 | 61.03 | 74.89 |
| Value of steer gain | 99.86 | 58.87 | 98.83 |
| Return on initial steer above $23 cost | 28.04 | 8.85 | 28.22 |
| Feeding return per steer | 127.90 | 67.72 | 127.05 |
| Return per steer above feed cost | 53.99 | 6.69 | 52.16 |

* Pork return was calculated as 21.4 pounds of pork produced per 100 pounds of steer gain in the group receiving shelled corn. Value of pork used was $19.50 per cwt. and $3.50 per cwt. pork was deducted for hog supplement cost. There was no follow-up work in ground corn lots.

# How To Do A Better Job With Less Work

**Higher efficiency with laying flocks may be the answer to low income. . . .**

Condensed from Poultry Tribune

*Wendell Earle*

CORNELL UNIVERSITY

INCOMES ON POULTRY farms go up and down as prices rise and fall. Even in a good year some poultrymen lose money and in a poor year some poultrymen always make money. Why do we find these wide differences between farms in any one year? Efficiency of operation is largely the answer. Efficiency depends on: (1) Size of business, (2) rate of production, (3) layout and arrangement, and (4) plan of work.

### Size of Business Important

As the number of layers increases, many of the chores do not increase in proportion. It takes as much time to walk a given distance to the feed room to get feed for 100 hens as it does for 200 or even 500 hens.

Farm surveys show that as the number of hens per farm increases, the hour of labor per hen decreases. During a year's time, each hen in a flock that averaged 323 birds needed 3.2 hours of labor. The hours of labor per hen declined to 2.4 for the flocks with 718 layers. The largest flocks—1,718 hens —received only 1.9 hours of labor per bird. In other words, the poultrymen with l a r g e r flocks spent 60 per-cent as much labor for each hen as did poultrymen with smaller flocks.

Farms with large businesses usually pay better than those with small businesses because the more eggs sold at a favorable margin, between production costs and prices received, the larger the income. Usually, poultrymen with large flocks can buy and sell at more favorable prices than can small flockowners because of volume discounts and c r e d i t s. Further-

Reprinted by permission from Poultry Tribune, Mount Morris, Illinois

more, the investment in buildings and equipment usually does not increase so rapidly as does increase in size of business.

### Rate of Production Should Be High

The number of eggs produced per layer is the best measure of rate of production. It's easy to figure. Just take the yearly egg production and divide it by the average number of layers on hand during the year. Top production pays.

It takes about the same amount of labor to care for a hen laying 209 eggs as it does for one laying only 137 eggs. Although hours per hen remain the same, the labor per dozen goes down as egg production goes up.

Regardless of the breed, high rates of production are important in determining profits. With heavy breeds, each increase in production of a dozen eggs per hen reduces the average cost about 2.4 cents per dozen. With light breeds, costs decrease 2.2 cents for each dozen increase in production. Without high production, all other desirable practices do not result in labor efficiency, low costs, or good returns.

### Consider Layout and Arrangement

Time and travel studies on poultry farms always have shown a wide variation in the number of chickens taken care of per man, in the number of eggs produced, and in the time used to feed or care for layers or to gather eggs.

Labor is an important item of expense on most poultry farms. Labor makes up about 17 per cent of the cost of producing a dozen eggs. Moreover, farm wage rates have been rising for years, and it is safe to expect that wages will continue to rise.

Since about 85 per cent of the time spent on the poultry enterprise is for daily chores, a few pointers based on the experiences of other poultrymen may be of help to you. You may be surprised to know that it takes about 75 minutes and one mile of travel to do the daily chores for every 1,000 hens you have on your farm.

The number of trips made to the laying house is one of the first things to consider when planning how to do a good job with the least amount of work. To reduce the number of trips, more jobs need to be done on each trip through the pens. On some farms, certain jobs might be omitted or at least the number of times they are done reduced.

To keep the number of trips to as few as three, jobs such as feeding and gathering eggs need to be combined. Water fountains for example, may be cleaned when the worker is in

the laying house to feed the hens or gather the eggs.

### Consolidate Your Buildings

On many farms pens have been added or new buildings constructed as the size of flock increased. Many of these buildings are not well arranged for efficiency in daily chores. Possibly some of the smaller buildings, housing 100 or 200 hens, could be used for other purposes. Additional space may be found in some of the existing pens or some of the pens might be enlarged. In any case, you may want to take a look at your building situation and see if the poultry flock couldn't be consolidated and housed in one building.

### Less Time Spent In Larger Pens

The time and travel for daily chores decreases as the size of pen increases. To care for a given number of hens in small pens, you will not only enter more pens but will visit more nests, more waterers, and possibly more feeders. You must weigh or measure mash for more pens and carry it into each pen.

The size of pen, however, cannot be increased indefinitely without some problems. The amount of work done per hour and per mile of walking could be increased on most farms by combining pens to increase their capacity. A farm survey showed that as pen size increased from 123 birds to 254 birds, there was nearly a 50 per cent decrease in the amount of time spent and about a 30 per cent decrease in the distance traveled per 1,000 birds. Take a look at your pens to see if there is any possibility of eliminating some of the small ones or combining them into one good-sized pen.

Most of the time and travel that you spend on your poultry business is spent in the pens taking care of the birds. A good arrangement of the poultry equipment is essential. Nests located near the door mean less travel to gather eggs. The feeders should be in line for easy filling.

### Automatic Waterers Save Labor

Labor-saving gadgets have saved more time for the job of watering than for any other daily poultry chore. The automatic waterer, together with heating cable, has eliminated most of the back-breaking work. Many poultrymen, however, still carry water or do not have automatic controls for the water fountains. If you have water piped into your laying houses by all means find some way to connect an automatic water fountain with suitable drainage for over-flow and protect it with heating cable.

### Feeding Still Takes A Lot of Time

The daily feeding chores take about 30 per cent of the total

time and distance spent on all poultry chores. The purpose of all feeding chores is to keep the birds healthy and in high egg production. If these goals can be obtained by feeding mash and grain only once a day, the extra effort spent on repeated feedings or on the feeding of other types of feed has little effect on returns. On many farms, time could well be spent to determine whether all feeding jobs are actually necessary.

A good location of the feed supply saves many steps. When the feed is delivered, store it in a bin next to the laying pens so that it will not have to be carried a pailful at a time to each pen. A feed bin that opens from the inside of the pen saves many steps.

In multi-story houses, consider the installation of elevators or hoists to replace the job of carrying feed to the upper stories. Let the feed flow by gravity through chutes to outlets in each pen. If set up properly the chutes replace much of the work required to carry the feed to the feeders. A good automatic feeder coupled with bulk storage of feed will save you many dollars and many hours of hard work.

In the long single-story houses, an overhead conveyor saves labor since a supply of feed can be carried on one trip for all pens, and there is no travel back to the feed room for additional feed.

**Egg Gathering Needs Attention**

The purpose of gathering eggs frequently is to bring them to the holding room as clean and of as high quality as is possible. Egg quality probably would be higher if eggs were gathered five times daily, but the labor cost might more than offset any premium received for the extra labor.

It is well to gather the eggs three times daily. It is best to have the nests located near the door. If you have a nesting room, have it near the door to the pen. In other words, let the hens walk to the nests. They have more time than you do. As soon as you have gathered the eggs, they should be taken to a cool room where they can be cooled, graded, and packed.

On large commercial poultry farms where one or more persons work full-time on the poultry, an egg room in the cellar of one of the poultry houses is best. On farms with small flocks, a good egg room in the cellar of the dwelling is most convenient.

**Question Your Plan of Work**

A successful poultryman always has a questioning viewpoint toward every part of his poultry business. Questions such as these have helped many poultrymen do a better job with less work:

1. Can I change what I am doing? Can the job or at least part of the job be omitted? For example, is it necessary to feed grain twice each day?

2. Can I change the way the job is done? Can two or more jobs be done at the same time or on the same trip?

3. Can I change or rearrange the place in which the work is done to save time.

4. Will it pay me to make these changes? This is an important question and one which frequently requires that you place a value on your time to give a basis for comparison with the cash outlay to be made for the change. The fact that only a small saving each day adds to real savings in a year frequently is not considered. The saving of only five minutes adds up in a year to three full days of work.

5. What can I do with the time saved? Do a better job with the present business. Increase the size of the laying flock or add other enterprises. If neither of these appeals to you, take the extra days for fishing or hunting.

## Feed Intake Measures Egg Production

Feed consumption is the measuring instrument or the "egg laying pulse" in your poultry flock. Ted E. Hartung, poultryman for the Colorado A & M College Extension Service, says a daily check of feed usage is important as a means of forecasting trouble whether it be in management, disease or weather.

A general rule, Hartung adds, for the Leghorn-type layer is use of 25 pounds of feed per 100 birds to maintain 50 percent production and 26 pounds of feed for 60 percent egg production. The heavier breeds consume about 20 pounds of feed per 100 layers for 500 percent production and 30 pounds for 60 percent production.

Lowered feed usage in the broiler pens means lowered growth rate and poor feed conversion, he said.

The poultryman lists the following ideas as a means to help boost feed consumption:

1. Supplemental feeding of pellets which the flock will clean up in 15 minutes; and more frequent feeding, preferably three times a day.

2. Use of high level antibiotic feeds for a week. There should be at least 100 grams of antibiotic per ton of feed to be effective as a means of getting the "biddies" to eat more feed.

*Colorado A & M*

# *Six Ways to Judge Efficient Farming*

**The author, an economist, takes a Georgia farm apart . . .**

Condensed from The Progressive Farmer

*J. W. Fanning,* GEORGIA EXTENSION SERVICE

THERE are many ways of looking at "efficiency" in farming. If we can agree on how to judge it, we can see what makes for greater efficiency. Probably the best way to start is to look at how a certain 160-acre Georgia farm came out in 1953.

This farm has the "new look." It's a grain-grass-livestock farm. It has 92 acres of cropland and 34 in pasture. A tractor does most of the work. One family tends the farm. The 1953 production was greater than that of 1952. But the drop in cattle prices hurt. Fortunately, there were some hogs to help out.

Let's take this farm apart and see if we can agree on how to go about measuring farm efficiency.

**1. Receipts must be greater than expenses.**

This farm took in $3,018.13 in 1953 and spent $1,515.33, leaving 1,502.80. Modern farming must show a profit. Folks used to say a farm was the only business that could lose year after year and keep on operating. That may have been true in the past but not today. Farmers are managers of capital. Anybody who handles lots of capital has to show a dollar profit, or he goes broke. Anyway you look at it, dollar profits are one way to measure farm efficiency.

**2. All resources must be fully used.**

Most of the land on this farm is working—but not hard enough. Almost 10 per cent of the 160 acres was idle in 1953.

Reprinted by permission from The Progressive Farmer, Birmingham, Alabama

All acres at work is a sure sign of efficient farming.

About 75 per cent of the productive labor on this farm was used in 1953. The 25 per cent not used was a "leak" in efficiency. If either land or labor is underemployed, dollar profits are not what they should be. Chances are that this 160-acre farm has to add another cash crop or make its hog enterprise larger to use all available labor.

This farm carries one tractor on 135 acres of open land, which isn't bad—especially since most crops can be easily handled with machinery. But there are two mules, also. Chances are some power went unused. Partly used capital is expensive. Hard-working capital is a sure sign of efficiency. Can we say, then, that efficient farming calls for working every acre, using every hour of labor, and keeping machines busy?

3. **Yields must be above average.**

Per-acre yields on this farm were about a v e r a g e. Corn turned 15 bushels, wheat 20, and oats 40. Around 2 tons of hay were saved per acre. As a rule, average yields mean about average profits. And average profits aren't good enough any more.

Have you ever figured your break-even point in per-unit yields? A lot of folks say it takes more than ½ bale of cotton, 20 bushels of corn, 20 bushels of wheat, ½ ton of peanuts, and 50 bushels of oats per acre to make money. If that's true, many are going in the hole every year. It's pretty well established that 4 pigs per litter, 150 eggs per hen, 450 gallons of milk per cow will barely break even on ordinary costs. High yields and top-notch efficiency go hand in hand. Here's another good measure.

4. **Volume turnout per man must be large.**

This one-family farm had a gross income in 1953 of $3,018.13. Another way to figure volume is on a per-man basis. This family had the equivalent of two full-time workers. Which means the $3,018.13 was produced by two "men," and the volume per man was $1,509.07.

Maybe you don't agree with this measure of farm efficiency. Well, let's take a look. Commercial farming takes dollars and a lot of them. There are large operating cash costs to cover. Living costs are high, too. Gross income per farm and per man must be high to take care of these costs and give a good living. When dollar income per man is low, trouble starts. When it's high, it's not so bad. How much must we have in gross income per man to get by in the future? $3,000? $5,000? Maybe $10,000? One thing is sure: large gross income per man comes only with efficient farming.

5. **A high return must be made on the investment.**

This farm made about 4 per cent on capital investment. That's low. Most types of farming turn money fairly slowly. Many farms have a hard time paying management. If they get labor paid they've done pretty well. This has to be changed one way or another—through better practices on more fertile soil, higher paying enterprises, less labor on more land, or by some other means. A high rate of return on investment shows farm efficiency.

* * *

**The world demand for food and fiber has led to a tremendous increase in use and production of fertilizers, says the United States Department of Agriculture, in 1951-'52, farmers of the world used 65 per cent more of these fertilizers than before the war. Manufacturers produced 70 per cent more.**

* * *

Let's look at some other returns on this farm. For each dollar spent on fertilizer, $5.50 came back in sales. Better soil and high-yielding varieties would have increased this. Sales per animal unit came to $69.80. This might have been all right for beef cattle but was too low for hogs. Sales per acre of open land came to $22.57. Quick judgment says that is too low for a good living. Shouldn't it be about three times this to give dollars needed? That would have given a gross farm income of $8,840. A good goal to shoot for is $10,000, about three times what the gross income was. Getting a lot of dollars back for each dollar spent is a sure sign of efficiency.

6. **Capital investment must be protected.**

Efficient farming is "money-making" farming and not "tearing down" farming. Land on this farm is mostly in conserving crops. Machinery and equipment are housed and greased regularly. Animals are fairly well protected against disease. Certainly, dollar income is not coming from tearing-down capital in land or labor or machines. The problem on this farm is to make the present farming system work harder and turn out more to sell.

When you sell off your soil fertility and call it profit, things are getting in a bad way. When you sell cows and consider the dollar returns profits, it won't be long before you are out of the cow business. Efficient farming builds farm capital strong while it is making money. This is not easy, but isn't it a good way to measure farm efficiency?

# Big Business On 120 Acres

**If you think your farm is too small, read what Don DenAdel does to increase his income . . .**

Condensed from Successful Farming

*Wayne E. Swegle*

DONALD DenAdel has only 120 acres of rolling Marion County, Iowa, land—but he doesn't want any more. And if you took a look at his income figures you might say he doesn't need any more. Incomewise, he's pushing a lot of farmers with 160's and 240's in his section of the state—the southern part.

Don looks at it this way: Most farmers want more land for only one reason—to make more money. That makes sense. Why can they make more money with more land? Simply because they have more to sell. Well, Don has more to sell than many farmers with twice his number of acres. But instead of spreading out with more land, he's piling more business on his 120. He does it with hogs—300 to 400 of them a year—along with about 20 head of feeder cattle. Even with corn yields pushing 100 bushels per acre, he can raise barely half enough feed for that volume of livestock—so he buys his livestock feed.

He feels this way of increasing his yearly sales—and income—from the farm is safer than buying more land. Here's why: He can do all his work alone now. If he added another 80, he'd probably have to add a hired man to get the work done. That would cost him around $2,000 a year, or more. And 80 acres of land at only $150 an acre is $12,000. Then there's extra machinery for the other man, too. In short, the risks multiply pretty fast. So Don would rather get his sales and profits up by buying feed for lots of livestock—which he likes to work with and

Reprinted by permission from Successful Farming, Des Moines, Iowa

knows how to manage well. He figures getting increased sales and profits that way is safer than investing in more land.

Many farmers pride themselves in raising all their own feed. But Don doesn't mind buying feed—because putting his own feed and the purchased feed through the large numbers of livestock doubles what his income would be if he simply sold his crops.

With the extra feed and livestock helping protect the fertility of his 100 tillable acres, Don can keep half his farmland in corn—with a corn-corn-oats and seeding-meadow rotation.

Here are more of Don's ideas for getting top profits from his 120 acres: Both the hog and cattle enterprises are planned with the market in mind, so he gets the most out of his feed and labor. He plans his farming ahead on a five-year basis. He knows where crops and livestock will be every year.

Jobs are planned throughout the year so they don't pile up in any one month. He hires no extra help, and changes work with neighbors for jobs he can't do alone. A few minutes are set aside every night for working on the farm records. He can tell you how much he makes on hogs, corn, and so on. This helps make the farm business more profitable, because he knows his strong and weak points.

Don keeps up to date on new farming methods and new ideas by reading farm publications. He faithfully attends winter farm night-school sessions at the Pella High School vocational-agriculture department, and calls frequently at the county Extension Service office. Being a farm account cooperator, he gets topnotch farm business advice from Charles Greenlee, Iowa State College specialist.

Hogs are one of the big keys to Don's 120-acre farming success. He starts spring farrowing in February—with his eye on that high August market for selling his fat hogs. First sows farrow in the central farrowing house—with movable hoghouses pulled up close for more sows than the central house can hold. Heat bulbs and running water are available. After the pigs are a few days old, they're turned together with access to a balanced creep-feed ration. These pigs are kept in the houses until they're weaned in April. Then they're wormed and taken to clean pasture.

From about the middle of March on— depending on the weather—pigs are farrowed in movable houses in the field where they'll be raised—separate from the older pigs. All pigs are castrated at about 10 days of age, vaccinated for cholera at 6 weeks—before being weaned at 8 weeks of age. Fall pigs are

farrowed in the timber pasture.

Since Don is with all sows at farrowing time, day or night, and doesn't have a hired man on his 120, he plans carefully so jobs don't pile up. He gets his spring farrowing out of the way before field-work time comes. Sows are bred back as soon as possible for September farrowing. Early-fall farrowing comes between summer harvest and corn-husking time—and pigs are ready when the winter market climbs back up from the December low, about in February.

Don marks gilts from the largest spring litters, then separates some of the best-doing kind from the fattening hogs for breeding. They're kept for three litters unless they disappoint him in performance. With this three-litter-and-sell system, he ends up with about twice as many spring pigs as fall pigs.

He has water piped to some fields—and he has a big tank which fits in the truck for hauling water to other fields. He has self-waterers for the hogs, with tank heaters.

Here's another idea which lets him stay in the field in the spring. He has two portable corncribs for self-feeding ear corn. He moves the cribs to the field to be used for hog pasture and fills them at husking time right where the corn will be used. Next spring, he rips off a couple of boards and the pigs feed themselves with no hauling time taken from field work He self-feeds a protein and a mineral mixture, too. This self-watering and self-feeding system cuts care time for the fattening hogs to about 5 minutes for checking them twice a day during the busy crop season. Later, when the self-feeding cribs are empty, he has time to haul feed.

Don buys his feeder cattle in the fall—a few at a time—at sales. He has been following this plan rather than buying in a group because he can get the lot cheaper.

He roughs the cattle on pasture, cornstalks, and hay through the fall and winter. During the spring and summer they go on alfalfa-brome pasture, with a little corn. About July or August, Don moves them up to full feed and markets them at Good to Choice—mostly Choice—finish at the top market in about December, with litte feed cost in them.

He varies his cattle program as the market situation changes —and the number depends on the amount of pasture he has.

We mentioned Don's four-year rotation of corn-corn-oats and seeding-meadow. For hogs, the seeding in oats for meadow is alfalfa, red clover, and Ladino —for cattle it's alfafa, brome and timothy. In this rotation, hogs are in the same field every four years. That makes

about 50 acres of corn, 25 of oats and new seeding, and 25 of meadow each year.

Cornland gets lots of manure the year before, and legumes are plowed down every four years. The second year, he side-dresses the corn with 33-0-0 at the second or last cultivation.

He plants a lot of kernels to the acre—an average of 2 kernels every 15 inches in 40-inch rows. In 1952, his corn averaged 97 bushels to the acre.

Don has plenty of machinery—and a reason for having every piece. He has a small truck which saves him money on feed—he can haul feed home himself. He also uses the truck for odd jobs.

Other equipment includes the usual line—plus a 6-foot motor-driven combine. Don says he doesn't have enough acres to justify the combine investment, but oats and clover harvests come at slack times so he does some custom combining. He has combined more than 1,200 acres at $5 an acre—so the combine has more than paid for itself. He hires a custom baler to handle his hay.

Like any successful farm operation, Don's success hinges largely on his keen management ability. He handles this kind of an operation well. Many of his ideas will work for you—regardless of the size of your farm.

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## These Things Mean Heavier Beef Calves

You've probably suspected these things in your own beef herd, but here's proof from livestock research folks in Montana:

1. The bigger calves at birth will likely wean out the heaviest.
2. The "easy keeping" cow that winters well will probably wean heavier calves.
3. Calf weaning weight will go up from first-calf heifers until about six years, taper off slightly until the cows are ten, then drop sharply.
4. Rain during pasture season makes a lot of difference in weaning weights. At Miles City, where the State and Federal Folks did their checking, an inch of rain below normal knocked off an average of 17 pounds weight. In really dry years, the drop was even bigger.

These conclusions came as a by-product of breeding research at the Montana Station. The goal is to breed cattle that gain faster on less feed.

*University of Montana*

# YELLOWED ALFALFA?

**Not dry weather but leaf hoppers. Plan now to control them next season. . .**

Condensed from American Agriculturist

*George G. Gyrisco*

MANY farmers in the Northeast noticed last summer that their fields of second-cutting alfalfa were yellow and stunted. Some attributed this yellowing to dry weather; others to potash or boron deficiency.

Some alfalfa may be yellow and stunted due to one or all three of these causes but most second-cutting alfalfa fields are yellow because of the feeding of the potato leafhopper.

The potato leafhopper is a small, pale green, wedge-shaped insect about an eighth of an inch long when fully grown. This insect feeds largely on the petioles and undersides of the leaves. It is a very active individual both as an adult and as an immature nymph. The hopper can run rapidly backwards or sidewards and whenever a leaf is turned over on which the hopper is feeding, it will rapidly run to the other side. After the hay is cut in late summer or early autumn, the leafhoppers fly up in great numbers causing a great deal of annoyance.

The potato leafhopper causes injury to alfalfa and other legumes by piercing the leaves and stems with its beak and sucking the plant juices. While it feeds it secretes a type of organic chemical which later interferes with the normal food producing and trans-location processes of the plant causing it to become stunted and yellow.

Early leafhopper injury is characterized by various shades of pink and even bright red in such plants as ladino clover and alsike. This pink streaking begins at the midrib, whereas other disease or deficiency injuries first show up on the leaf margins. The early pink streaking will turn to shades of pink,

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red and even purple but usually these colors will be accompanied by a general yellowing and stunting of the legume. Hence it is often called "Alfalfa Yellows."

The potato leafhopper does not overwinter in the north. It spends its winters in the deep south where it continues to feed and reproduce all winter. As spring moves northward, the leaf-hopper follows the advancing season, arriving in New York about the first week in June where it immediately attacks alfalfa, beans, potatoes and many other plants. In New York, the insect arrives too late to cause any visible injury to the first cutting of hay.

If the first crop of hay is cut early for hay or silage, there will be many nice tender shoots available for the arriving hoppers.

It is in these early-cut fields that the most damage is caused. Where hay cutting is delayed in June, many of the new young hoppers and eggs are taken off with the first cutting, leaving the new growth relatively free of hoppers.

However, the leafhopper is a good flier and will move from newly cut fields to adjoining fields. Therefore even late cut first cutting fields will often show some hopper damage, particularly on the margins of the fields and on hill tops or knolls. Alfalfa fields near bean and potato fields, which are favorite food sources of the leafhopper, also will be heavily attacked, as these vegetables maintain a good reservoir of pests when the various hay cuts are removed.

Certain varieties of alfalfa, particularly the bacterial wilt resistant Ranger, are heavily damaged by potato leafhopper. Therefore farmers in leafhopper areas who have a wilt problem should spray for leafhopper if they wish to maintain a long rotation with Ranger alfalfa.

Leafhoppers are easy to control with insecticides. Apply either methoxychlor at 0.5 to 1 pound per acre or toxaphene at a pound and a half per acre. These materials are best applied as sprays using liquid type insecticides and a weed-type sprayer. They should be applied soon after the first cutting is removed before the new growth is more than 2 to 4 inches tall. If dusts are used, use a low concentration of 1 to 5 per cent and adjust your dosage accordingly to get the necessary amount of actual poison per acre. With sprays, 20 or more gallons of spray should be used per acre at 30 to 40 pounds of pressure. Both of the insecticides mentioned can be applied safely

to hay which will be fed to dairy cattle.

Remember when you see yellow alfalfa, check it for leafhoppers. Alfalfa has long tap roots and will not suffer from dry weather as early as the shallower rooted grasses. Dry weather, however, will cause leafhopper injured plants to wilt earlier and to show markedly the effects of the leafhopper injury. During wet seasons, the hopper does not prosper well and the plants are better able to maintain themselves.

## What Fuel For Your Tractor?

Gasoline, diesel fuel, or propane gas—which is the best tractor fuel?

The question would make a good topic for a debate, says J. A. Waller, Virginia agricultural engineer. Each has its good points, and the choice should depend on the individual situation.

Diesel fuel has the advantage of less fuel consumed per horsepower-hour of work, which is important in determining fuel costs. Horsepower-hours of work per gallon for the different fuels are: diesel fuel, 13.1; gasoline, 9.0; and propane, 7.2.

Gasoline has the advantage of easy starting and wide distribution. Gasoline powered engines are less costly to build, but carbon deposits and valve trouble are common. Gasoline is an excellent fuel for small tractors and for diversified jobs, even though it represents a higher fuel cost for work done than some of the other fuels.

Diesel fuel gives highest engine efficiency, a low fire hazard and long engine life, but diesel engines cost much more to make. High compression makes a 12-volt electric system or special starting equipment necessary, and extreme care must be taken to keep the fuel clean or there will be trouble with the injectors. Diesel fuel is recommended especially where the tractor is used 700 to 1,000 hours or more a year, and under steady load conditions.

Propane gas is clean burning, giving long engine life and smooth performance. However, conversion to propane is expensive and carburetors are hard to adjust. Besides, it gives less work per gallon of fuel, and the fuel tanks are bulky and often interfere. Where propane is low in cost, it has definite advantages, even though it ranks lowest in fuel efficiency.

*Virginia Extension*

# *Hauled-In Pastures*

**We may have to come to them if profits are to be maintained at a high level. . . .**

Condensed from New Jersey Agriculture

*Bruce Poulton*

INSTEAD of sending the cows to pasture let's bring the pasture to the cows! That's what we did at New Jersey's Dairy Research Farm last summer. About 50 head of our big Holstein cows were not on pasture all summer, but they had an abundance of fresh green forage to eat.

Each day at 7 a.m. and 2 p.m. a wagon load of green feed was harvested with a sickle-bar forage harvester and hauled to the barn for feeding. The cows were given an opportunity to eat all of this green feed that they could consume.

### Cows Waste Pasture

Dairy farmers have long agreed that a good part of the grass in a pasture is wasted by the cows. Some of it is trampled and some contaminated by droppings. Estimates of the amount of grass wasted by grazing cows vary up to 25 percent of the total grass available. This wastage represents an economic loss to dairymen that is becoming increasingly critical as the value of an acre of land increases. By cutting the grass and taking it to the cows it is possible to harvest all the forage grown on an acre of land and eliminate these grazing losses. This saving could conceivably enable the farmer to carry more cows per acre.

In addition to this increased carrying capacity "zero pasture" also might enable dairymen to harvest their pasture at its proper stage of maturity. A "zero pasture" system will eliminate the problem of supplying water on pasture and fencing pastures. Perhaps the most important advantage of this type of feeding system is the elimination of summer slumps in milk production that occur during a dry spell when pastures get short. Many cows never recover from this slump during the same lactation.

Reprinted from New Jersey Agriculture, New Brunswick, N. J.

The purpose of the trial that was conducted at the Dairy Research Farm was to explore the economics of a "zero pasture" program. Records were kept to determine the additional labor requirements for harvesting the forage, hauling and feeding it. The total amount of feed grown per acre was determined, finally the variation in daily milk production level was noted.

Preliminary results obtained during the summer of '53 show the following:

* * *

**Between 1,000,000 and 1,500,000 acres of U.S. land are being taken over annually by industry, airfields, and highways. Between 1,500,000 and 2,000,000 acres are being reclaimed by drainage and irrigation each year.**

* * *

### Ate 92 Pounds Daily

1. The fifty cows on the trial consumed an average of 92 pounds of green feed daily. This green feed furnished the cows with almost 19 pounds of dry matter a day.

2. The persistency of production of the cows that were green fed was greater than those that were pastured in a conventional manner. The cows on pasture dropped off in production badly several times during the summer when pastures were short.

3. The labor requirement for cutting forage twice daily for a herd of 50 cows was 2.76 hours. This time could be considerably reduced if the cutting was done only once daily.

4. Labor required for maintaining and servicing the harvesting equipment was about .35 hours per day.

5. Feeding the green material is most easily accomplished by letting the animals feed from the wagon used for hauling the forage from the field or by dumping the load into feed bunkers. For purposes of this experiment all cows were fed in the barn, with the feed being weighed in and the refused portion weighed back.

We estimate that we saved at least 920 pounds of feed—green basis— daily by bringing it to the cows instead of letting them trample the pasture.

Another phase of this study will be conducted during the summer of 1954.

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**Girdle Pulpwood Trees**—Chemical girdling is a new way of loosening the bark on trees cut for pulpwood production. Walter Simonds, Penn State extension forester, says the treatment consists of a 6- to 12-inch sap peeled girdle, about waist high around the tree, which is painted liberally with a solution of sodium arsenite.

# Three Men Use Fifty Four Motors

**Here is how they care for 12,000 hens and 7,000 pullets . . .**

Condensed from Electricity On The Farm

*Bruce Fearn and Ivan Gold*

AMERICA'S strength is a fabric of many threads. One of the strongest of these is our fabulous use of mechanical labor. Another is that no where on earth is there food for the people in such obtainable abundance.

Sandy Ridge Farms, Bucks County, Pennsylvania, owned and operated by Cecil Toor, is a fine example of American Food production. It is here that 3 men service 12,000 laying hens, 7,000 range pullets, incubators of 17,640 egg capacity, battery brooders for 4,000 chicks and brooding pens for starting 5,000 chicks. It strains credulity, to be sure, but an examination of the operation of the 54 other hired hands—electric motors—puts it into the realm of the believable.

At the beginning, the eggs under incubation are ventilated, turned, warmed, and humidified automatically. It takes management, direction, and know-how, but the labor is done

**List of Motors**

| Application | Number of motors |
|---|---|
| Litter stirrer | 1 |
| Oscillator—range lights | 1 |
| Space heater blowers | 3 |
| Incubator cleaner | 1 |
| Insecticide sprayer | 1 |
| Egg coolers | 2 |
| Egg cleaner | 1 |
| Egg grader | 1 |
| Egg washer | 1 |
| Incubators | 8 |
| Ventilators | 24 |
| Automatic feeders | 3 |
| Shop tools | 4 |
| Steam jenny | 1 |
| Water pumps | 2 |
| Total | 54 |

Reprinted by permission from Electricity On The Farm, New York City.

by electricity and motor driven equipment.

At the brooding stage the chicks are provided with fresh air, water, and warmth by automatic devices. From the brooder to the range the pullets are again served by electrical labor. Automatic fountains always keep fresh water ready. Floodlights and electric fences drive away predators.

When the pullets go into the laying house the labor problem multiplies and so do the legions of mechanical workers. Every night, without human effort, the production lights are turned on and off. Water is automatically carried to the hens without the touch of human hands. From the large storage hopper to the hens, feed is carried by mechanical hands.

In the winter, when the frost creeps into the laying pens threatening frozen, broken water pipes and a disrupted schedule, a full time electrical watchman sounds the alarm calling innumerable electric hands to warm the water pipes and keep icy winter at bay. In summer a flock of high producing hens will show a daily mortality from heat prostration and a slump in egg production. But electricity is a versatile worker and when summer comes the thermostatic workman calls in the hands again. This time instead of creating warmth the workmen whirl the exhaust fans and draw fresh cooling breezes through the house saving the flock and keeping the flow of eggs uninterrupted.

From the laying house by mechanical carrier, the eggs are taken to the egg room. Here again many laborious, time consuming tasks await. There never was a hand method that could process the production of 12,000 hens by three men and permit the doing of the other work as well. In days gone by eggs did not get the care they get today.

At Sandy Ridge, eggs get the very best of handling. First they go into an electrically heated wash where detergent and sanitizer make them clean and keep them clean. This process is time and temperature controlled to protect egg quality. Hurried immediately into refrigerated storage the eggs are quick-cooled to 65° in a room of 85% relative humidity. They are held there for candling, grading, and packing. The fibre egg cases are also stored in the refrigerated room so that, when packed, in summer weather sweating on the eggs is cut down.

The egg business is one of careful handling and labor. Nowhere is this more evident than when they are taken from the refrigerator storage (usually the next day) and returned to the egg room. Here, in preparation for selling and delivering,

the eggs are candled, graded, inspected, and packed. The process is almost completely mechanized. From the time they are placed on a guide they are candled, weighed, and graded by machine. Human labor puts them on the machine and takes them off—the machines do the rest.

Now the eggs are ready for the trade—the corner store, the restaurant, the super market or the huge egg auction. It has taken a lot of work. With 12,000 laying hens producing at a high rate, the work assumes mountainous proportions. The answer here is 3 men and 54 motors. Sandy Ridge could not do the work with man-power alone and stay in business. In fact, much of the service for the flocks could not be provided but for electrical equipment.

Sandy Ridge is a little bit of America—one of the threads in the fabric—producing food in abundance for the people—3 MEN and 54 MOTORS.

## Early Hybrids, Planted Thick Give Excellent Corn Yields

Several early hybrids, when planted at thick rates (14,000 to 16,000 plants per acre) give excellent yields of corn.

Agronomists at VPI Agricultural Experiment Station say tests indicate that corn hybrids such as Ohio C-54, Ohio W-64, Pioneer 303, and others of about the same maturity, give satisfactory results.

These particular tests were conducted at the request of apple producers in the Northern Shenandoah Valley who want corn hybrids that will yield well yet mature early enough for corn harvest to be completed ahead of apple harvest. The tests were located on privately owned farms and were conducted in cooperation with the farm owners.

In the cotton and peanut belt, producers want corn hybrids that make good yields, to be harvested in the fields by hogs, and the hogs to be ready for the early September market. At Holland, Virginia, Ohio C-54 gave the best results for this program. This hybrid, which is about two to three weeks earlier than the full season corn of the area, when planted at the rate of 16,000 to 18,000 plants per acre compared favorably to the full-season corn planted at from 12,000 to 14,000 plants per acre.

*VPI Newsletter*

# *Lamb and Eggs*

**A new form of management which works out well for poultrymen. . . .**

Condensed from American Poultry Journal

*William Gilman*

THE old-fashioned general farm was a little like "Old MacDonald's" place, with sound effects from all sorts of domestic animals and birds. Specialization has been changing the picture. But even specialists sometimes note the value of dovetailing two kinds of farming. An example is the growing interest by poultrymen in having a small flock of sheep on the place.

In the past 10 years, this has evolved into a paying formula on many poultry farms in the Northeast, usually ordinary-sized ones having a couple thousand layers or so, but the number varies. The idea is that grazing sheep work in nicely with having a better poultry range.

Generally, the formula runs like this: wool from the ewes pays the sheep-raising costs, and lambs represent a profit. Meanwhile, the sheep serve as 4-legged lawnmowers and weed-destroyers to keep the range in prime condition for growing replacement pullets.

All agree there is no problem of diseases spreading from sheep to chickens or vice versa. In fact, Earle Fowler, veteran poultryman of Manchester, Vt., credits sheep with reducing poultry troubles. By keeping the range from becoming overgrown and clumpy, sheep eliminate breeding places for snails and other hosts to parasites and allow purifying sunshine to reach turf roots more easily. He thanks his sheep for reducing range paralysis and other common infections.

### Good Range Saves 230 Lbs. of Feed Per 100 Birds

THE main advantage is better range, with sheep doing the mowing work. It's well

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known that coarse grass is inferior to the short, succulent shoots that are a green feed rich in proteins, vitamins and minerals. Latest test findings by an expert on the subject, Dr. Donald C. Henderson, Vermont's extension poultryman, show that 100 birds on good range will need 230 lbs. less purchased feed up to 24 weeks of age. It was with Dr. Henderson's advice that Mr. Fowler became perhaps the first poultryman to add sheep with a better range specifically in mind.

Like others, he agrees that sheep can be a nuisance if allowed to steal from the feed hoppers put out for birds on range. But it's a problem that can be solved in various simple ways.

The University of Massachusetts recently added 16 breeding ewes to a 4-acre range, and reports they kept the grass in fine condition. The sheep couldn't raid hoppers because there weren't any. This research center uses the groundfeeding method, scattering pellets and grain on the sod with a lime spreader pulled by tractor. What little grain sheep could eat off the ground wasn't of importance.

Mr. Fowler also uses the groundfeeding method. Before this, he handled the problem another simple way. His range was divided into 5 plots of an acre or two apiece, with hip-high sheep fencing separating the plots. The sheep were rotated, staying in one plot 2 or 3 days. Poultry feed hoppers were always on the other side of the fence from them. Pullets could go through the fence, but the sheep couldn't.

Another poultryman, M. E. Johnson, of Becket, Mass., is an example of a smaller farmer who has found sheep both useful and profitable. He starts in the fall with a new flock of 800 R. I. Reds and by spring has culled them down to the best 500. The growing pullets are ranged with a flock of 9 sheep which came on to the place originally as one of his son Arthur's 4-H projects.

**Breeds of Sheep Used Vary**

To keep the sheep honest, Mr. Johnson nailed adjustable roofs to the birds' feed hoppers. These keep out both rain and sheep, while allowing space for pullets to get at their feed.

The breeds of sheep used vary, and some are far from purebred. Hall Farms, North Bennington, Vt., uses purebred Dorsets — about 10 of them — to go along with pullets being raised for the laying flock of 2,000 hens. They have value as breeding stock.

Raymond Tenny, of East Bethel, Vt., says his sheep are "just nondescript," but is well satisfied with them as grass cutters for his chickens. He started with 6 sheep on a trial basis, and now keeps around 14, to go along with his replacements for a laying flock of 1,800 hens.

Everett Smith, Ascutney, Vt., is a prosperous poultryman with a comfortable sized flock of layers. He starts two 2,800-bird flocks of replacements each year. He has mechanized throughout — but gone back to sheep, too. On his 5-acre range —clover and native grasses — he has a flock of 25 sheep, and their lambs do the clipping. The ewes are grade Suffolks, and he uses a registered Suffolk ram. The results are nicely paying lambs, weighing up to 100 lbs. at 4 months.

### Wool Pays Cost, Lambs Are Profit

With others, Mr. Smith agrees that wool pays costs, and lambs are profit. "Of course," he says, "I had to learn not to overgrain them — they don't need it."

The farm's old barn has been converted to do double duty. Sheep are over-wintered on the first floor. Hay for them is stored on the third floor and comes down by chute. The second floor contains chick brooding pens, which have insulated walls. The hay above serves as ceiling insulation. With sheep below and hay above, the chicks are kept snugly warm.

Something unusual in sheep is used, with equally good results, by Howard A. Moxley, who maintains a flock of 2,000 hatching egg layers on his farm near Andover, N. H. His range is kept clipped by a flock of registered Karakuls, from which he produces meat, wool, breeding stock and "Persian lamb" pelts. This is the famed breed from Asia Minor called the oldest domestic animal known to man and also known as "the only fur-bearing animal you can pasture."

Mr. Moxley produces around 40 meat lambs a year, and there's no marketing problem. "They're all spoken for way ahead of time," he says.

The Karakuls have a unique habit of reducing their exposure to hot sun and black flies by rushing out to range for fast feeding, then rushing back again to their shed where they crowd together to keep off flies.

Although there is no disease common to chickens and sheep, the latter can be badly bothered by internal parasites. This was a serious drawback until the important discovery of phenothiazine's effectiveness in 1938 in the control of worms.

# *Feeding Antibiotics*

**The swine industry has been given a terrific boost by the discovery of the growth stimulation properties of antibiotics. . . .**

Condensed from The Hog Breeder

*Dr. Lawrence Carpenter*

UNIVERSITY OF MINNESOTA

EVERYONE wants to do a good job of raising hogs. Farmers are proud of thrifty, fast-growing hogs that have curled tails and a twinkle in their eyes. More people are producing these hogs than ever before through the use of feeds containing antibiotics.

It has been just two years since the growth stimulating properties of antibiotics were discovered and announced to to the swine industry. Many interesting things have developed during the two years. First, and probably most important, was the rapid confirmation of the stimulatory effect by workers at practically all agricultural experiment stations. Immediately the feed industry accepted the challenge and added antibiotics to feeds.

Today all reliable and progressive feed manufacturers are offering feeds that contain antibiotics in sufficient amounts to produce outstanding results for the commercial hog raisers. Feed for younger growing hogs that do not contain antibiotics are already obsolete. Special highly fortified feeds have been developed that offer means of getting the antibiotics into the pigs at a very early age.

New and added interest has developed in the swine industry. We are now able to wean earlier and make better use of the sow. She can now produce three litters a year instead of two. Already many swine producers have seen the economy of using the sow for litter production and eliminating the burden-

Reprinted by permission from The Hog Breeder, Chicago, Illinois

some job of producing milk for 56 days.

Sow milk replacers are coming into vogue. The secret of these milks is their high antibiotic level. At present they are the best means of getting antibiotics into the litter while still young. Antibiotics fed to the sow do not get into the milk in sufficient amounts to cause increased growth. These feeds are now replacing the sow and the time has come when we can start selecting sows on their ability to produce large litters without being concerned with their ability to lactate.

All the changes point to efficient pork production for the farmer which really means more dollars in the pocket. Already, a change has been noted in the flow of hogs to market. Pigs are coming in earlier and it looks as if there is going to be a much steadier supply the year around.

For the farmer, the use of antibiotics makes it possible to delay farrowing a few weeks and still get his hogs to market on time.

During the current spring farrowing many farmers are going to use sow milk replacers, some are going to be disappointed but on the other hand others are going to enjoy success they never dreamed possible. Don't put your whole herd on the synthetic milk program, and don't try to wean a lot of pigs at birth or in the first week. The sensible way is to try the new milks on one litter at a time and if you succeed expand gradually, but if you do not succeed the first time try it again, but first improve the conditions. A good place to start would be with a litter suckling a poor milking sow, or an orphan litter.

Remember that good sanitation and temperature are very important for the success of raising little pigs, and the smaller they are the more important these factors become.

Farrowing stalls are the best answer at the moment for reducing losses at farrowing time. Put the old sow in a clean dry farrowing stall and provide extra heat for the newly born pigs. Keep the sow confined for three or four days so she cannot lie on the little pigs and then after the little pigs are well started (10-14 days) they can be put on a synthetic milk and the old sow can be rebred.

There have been reports that things other than antibiotics may be able to stimulate the growth of swine. Detergents, chemicals with soap-like properties, have been shown to stimulate the growth rate of weaned pigs. Although these compounds also increase the growth rate of chicks it is much too early to recommend their general use in swine diets. They are cheaper than antibiotics but we don't know if they will control diar-

rhea or aid in the conversion of feed to pork.

The arsenical, 3-nitro-4-hyroxy phenyl arsonic acid, also has been found to stimulate growth and to control swine dysentery ,bloody diarrhea or black scours). Many swine raisers are now using this compound with success.

Will these new compounds replace the use of antibiotics in swine diets? It is difficult to say, but in order to do so they must have the same properties as antibiotics and be cheaper.

## Swine Raisers Get Disease Warning

Swine raisers should be on the alert against possible occurrence of atrophic rhinitis in their herds, says Dr. Howard Dunne, professor of veterinary science at the Pennsylvania State University.

The disease is increasing in 14 states, he says. Atrophic rhinitis is characterized by its slow spread and disfiguration of the snout, and results in loss of weight, poor gains, and poor sales value.

With vesicular exanthema on the decrease, only seven states have infected herds at this time. Hog cholera also is declining, but remains the number one killer of swine, Dr. Dunne says. With the development of rabbit-adapted vaccines as an important part of its control, hog cholera eradication may be just around the corner.

*Pennsylvania State College*

## Wool Floor for '54 Set at 52.1 Cents

National wool support price for 1954 marketing season will average not less than 52.1 cents a pound, grease basis, according to an announcement by the U.S. Department of Agriculture.

The support price reflects 90 percent of the estimated parity price as of the beginning of the 1954 marketing year. National average support price for 1953 wool production is 53.1 cents a pound, grease basis, or 90 percent of parity as of the opening of the 1953 marketing season.

The department announced a minimum support price for 1954 wool in accordance with forward pricing provisions of the Agricultural Act of 1949. If wool parity price as of April 1, 1954 (beginning of the wool marketing year) is higher, the support price will be raised to reflect 90 percent of wool parity price at that time. In no event will the 1954 season support price be less than 52.1 cents a pound, the announcement says.

*University of Wyoming*

# GETTING BIGGER HAY YIELDS BY CONTROLLING INSECTS

**Research and farmer experience prove that it pays to control insects on legume hay crops. . .**

Condensed from American Agriculturist

*George G. Gyrisco*

TWO YEARS of grower experience in New York have confirmed six years of experimental results showing that larger yields of better quality forage can be grown if the insects and other closely related pests are controlled.

Yield increases of over 50 per cent have been achieved on first cutting legume hay where spittlebugs have been controlled and even larger increases have been obtained on the second and subsequent cuttings where the potato leafhopper has been controlled. In some states such as Ohio, Pennsylvania and New Jersey yield increases of over 100 per cent have been reported with spittlebug control. While such yields are not necessarily typical of the results one can expect with insect control, they are not unusual.

Although there are a large number and variety of insect pests on forage crops in New York, the program of control is essentially one of two applications—one on each cutting of hay. Spittlebug nymphs should be treated on the first cutting just as soon as the first spittle mass is seen. Such a treatment will not only control the spittlebug but also many other insect pests that are present at that time.

On the second cutting, a single application is made, preferably as a protectant, for the potato leafhopper when the new growth is 2-4 inches tall. The leafhopper application will again control other insects pests which in themselves are not greatly important but which contribute to the overall damage to our forage.

**Yield Increases**

Figures on yields of red clov-

Reprinted by permission from the American Agriculturist, Ithaca, N. Y.

er and alfalfa after spittlebug control in 35 tests conducted in 1952 and 1953 throughout New York State showed that the yields varied from a 10 per cent decrease to 55 per cent increase. Some of the tests were badly timed or were located in areas of low insect infestations and as a result, the treatments were of no value, but even so yields of treated hay averaged better than a 21 per cent increase over the untreated hay on a dry weight basis. In general, growers can expect on the average about a 25 per cent increase in hay from spittlebug control but the increases may vary from none to more than 50 per cent.

In 19 field experiments on alfalfa conducted for the control of the potato leafhopper, it was found that the yields varied from an 8 per cent decrease to a 49 per cent increase in alfalfa on a green weight basis. The 8 per cent decrease occurred on one field where an experimental material gave severe damage. The value of treating legumes for potato leafhopper was well demonstrated this past year as some growers who did not treat did not have enough second cutting to cut.

With the cost of some insecticides at less than one dollar per acre per treatment, growers should be willing to treat good legume hay as an insurance of a good crop as they are willing to lime or fertilize for a good crop. Good legume hay never was cheap and is certainly not expensive today.

**How To Apply**

Most insecticides are toxic to bees and should not be used on legumes in bloom; such applications in New York are prohibited by law. If insecticides are being applied to fields adjacent to those visited by bees, every effort should be made to prevent drifting of materials. Least damage will be caused if early morning or evening applications are made, or if the treatments are made on cool or cloudy days when fewer bees are flying. Inadequate numbers of pollinating insects throughout most, if not all of New York, justify every precaution which seed growers can take to protect them.

Experimental evidence, confirmed by farm experience, indicates that the low pressure, low volume "weed" sprayer is the most economical and effective machine for use on insects of forage crops. While high gallonage sprayers applying 80-120 gallons of spray per acre at 150-300 pounds of pressure can be used most successfully for the control of insects of forage crops, such sprayers are not necessary and are not as economical as low gallonage sprayers.

Low gallonage, low pressure

sprayers applying 10-25 gallons of spray per acre at 30-40 pounds of pressure are ideal for controlling insects of forage crops. Although 10 gallons of spray per acre has given good control when the plants are small, as a whole, however, less than 20 gallons per acre of spray has not given as good coverage or as consistently good control and is therefore not recommended. Pressures of more than 40 pounds up to 80 pounds, using no less than 20 gallons of spray per acre, have been found to be slightly better than 30-40 pounds but are not necessary if not readily obtainable. Higher pressures than 80 pounds using low gallonages cause excessive misting and loss by drift and therefore are not recommended.

Bean and potato dusters are satisfactory for the control of forage insects but as a rule are somewhat inferior to sprayers. Dusters with a tubular forage boom are a little better than bean dusters but do not approach sprayers for efficiency. Dust only when there is little air movement and avoid contamination of pastures which are being grazed.

Growers purchasing equipment for use on forage insects should give their first consideration to a low gallonage, low volume sprayer. It is highly satisfactory, light, economical and very versatile for use on weeds as well as forage insects.

## Cattle Inherit Their Ability To Gain Weight

Cattle inherit their ability to gain weight. But it takes full feeding to bring out this characteristic. Limited feeding will not do it, says W. E. Flint, extension beef cattle specialist at New Mexico A & M College.

The age of an animal affects the efficiency of feeding, Flint explains. As an animal grows older and heavier, more and more feed is needed. A 500-pound steer needs about 500 pounds of grain, 200 pounds of hay, and 200 pounds of silage to produce 100 pounds of beef. To produce the same gain, the 800-pound steer requires 630 pounds of grain, and 250 pounds each of hay and silage. The older animals will make higher average daily gains but will eat more feed in doing so.

Calves make the most economical gains, and yearlings will do better than 2-year-olds, Flint states. However, it takes about six weeks longer to fatten calves than to fatten yearlings. Two-year-old animals will fatten the quickest of all and use more feed in doing so.

*Farm, Ranch and Home News*

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